DEPARTMENT OF TECHNOLOGY
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NOVEMBER 16, 1957
VOL. 153 — NO. 20

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

TELEPHONES IN JAPAN

Japanese lady applying for telephone service. During the past five years, under quasi-private operation, the number of telephones in Japan has increased to 3.6 million—an over-all gain of 1.5 million. See p. 20 for story.

Published every week on Saturday by TELEPHONY PUBLISHING CORP. 605 S. Dearborn St., Chicago 5, Ill. Subscription $4.00 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

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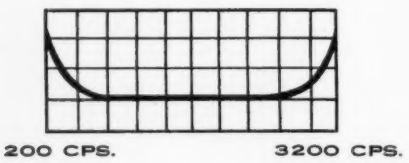
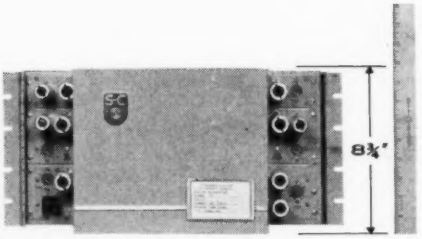
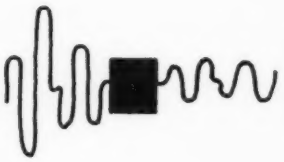
For full technical details, write or call your Stromberg-Carlson representative. Ask for your free copy of Booklet T-2014.



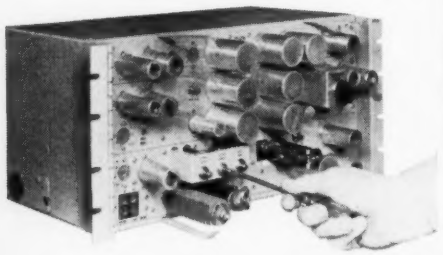
1. Toll quality frequency response: —3 db. points at 350 and 2900 cps.; —10 db. points at 200 and 3200 cps.



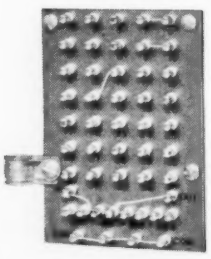
2. A unit of "501" carrier takes only 8¾ inches of rack space.



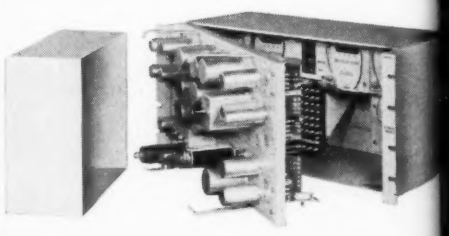
3. Voice limiters safely reduce excess voice currents that might cause unwanted relay operation.



4. Only 9 controls in the system mean simplified operation and less possibility of breakdown.



5. You can convert from ringdown to dial operation by simple wire strapping on the terminal board. There are no parts to change.



6. Units are complete and factory-wired.

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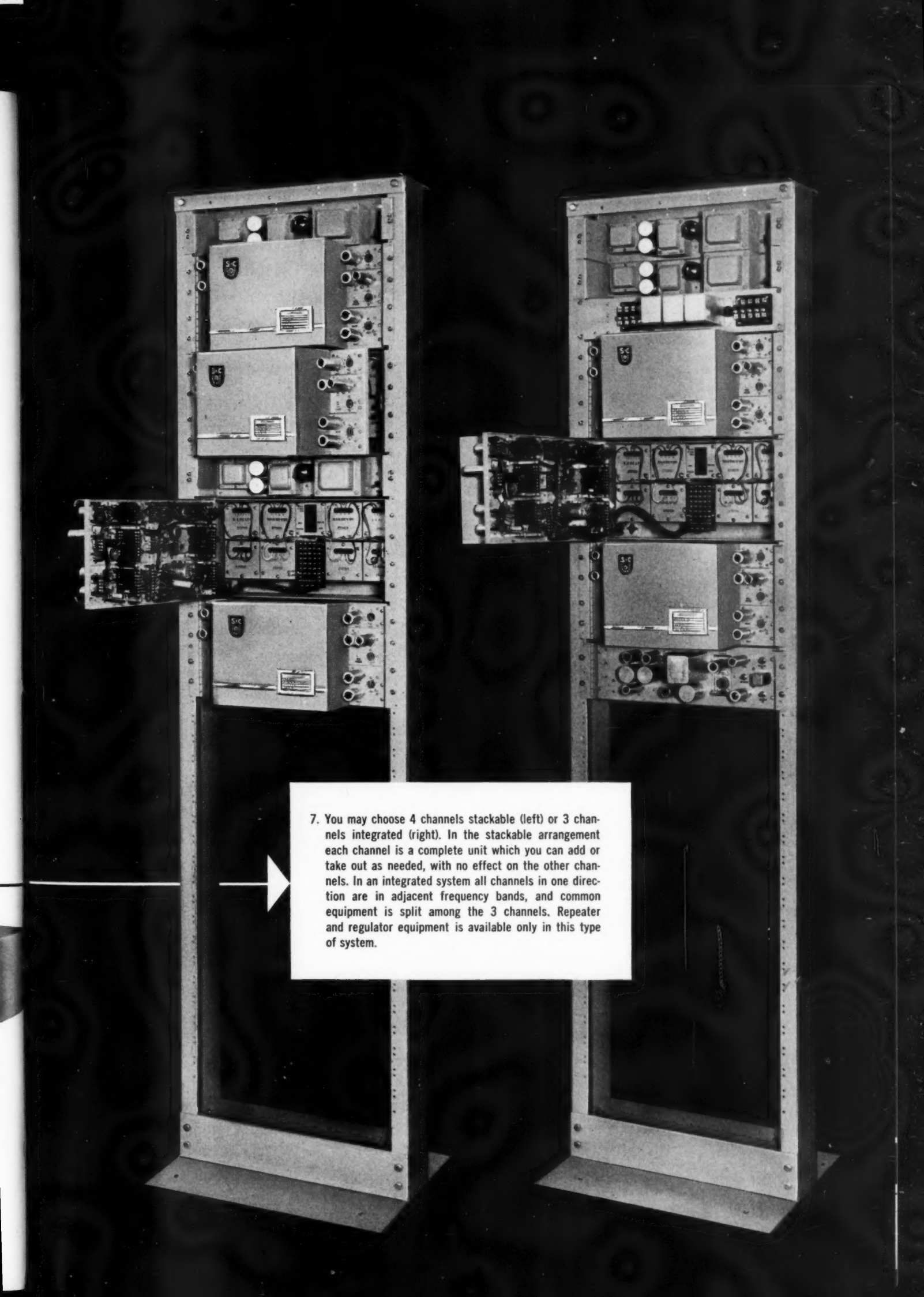
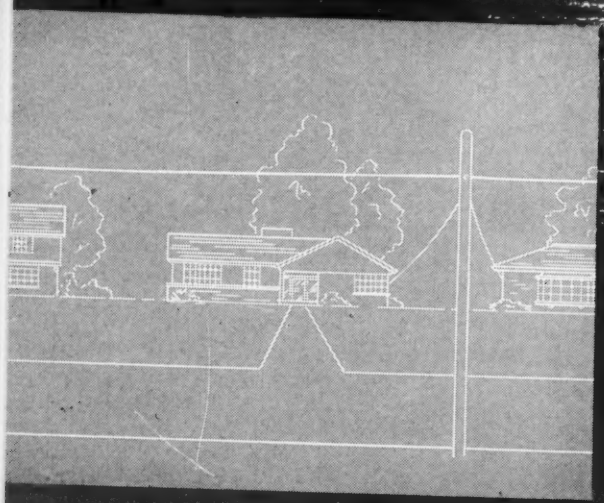


7. You may choose 4 channels stackable (left) or 3 channels integrated (right). In the stackable arrangement each channel is a complete unit which you can add or take out as needed, with no effect on the other channels. In an integrated system all channels in one direction are in adjacent frequency bands, and common equipment is split among the 3 channels. Repeater and regulator equipment is available only in this type of system.

TELEPRENE

astonished the industry



WB has that which others have yet to gain . . . EXPERIENCE

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drop wire...

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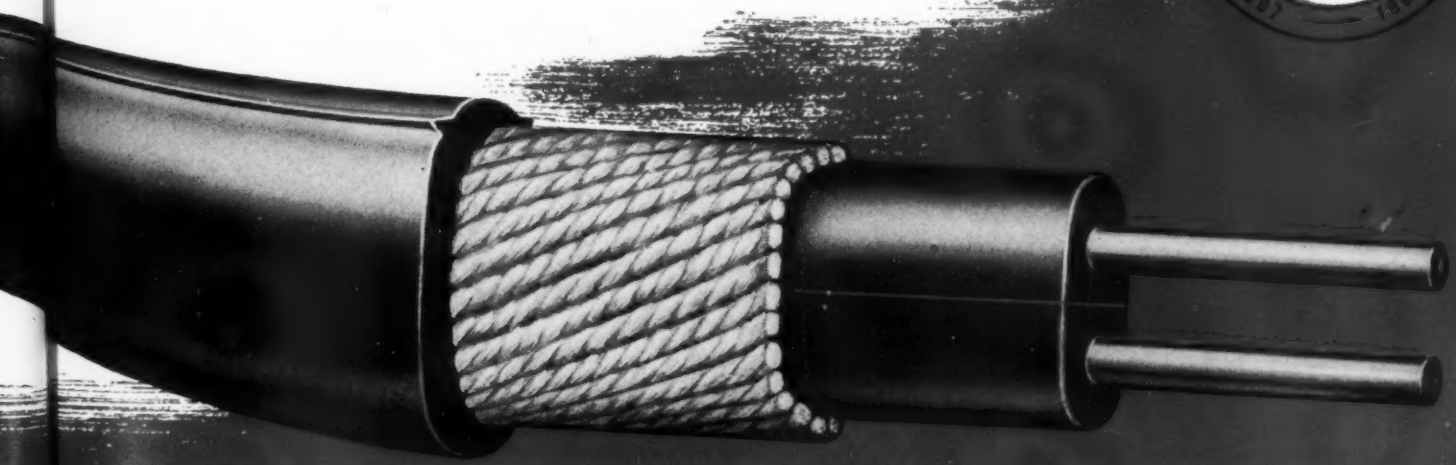

Well Built Wires Since 1899

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NEW HAVEN 14, CONNECTICUT

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THEY WANT ONE J

YOU CAN GIVE I

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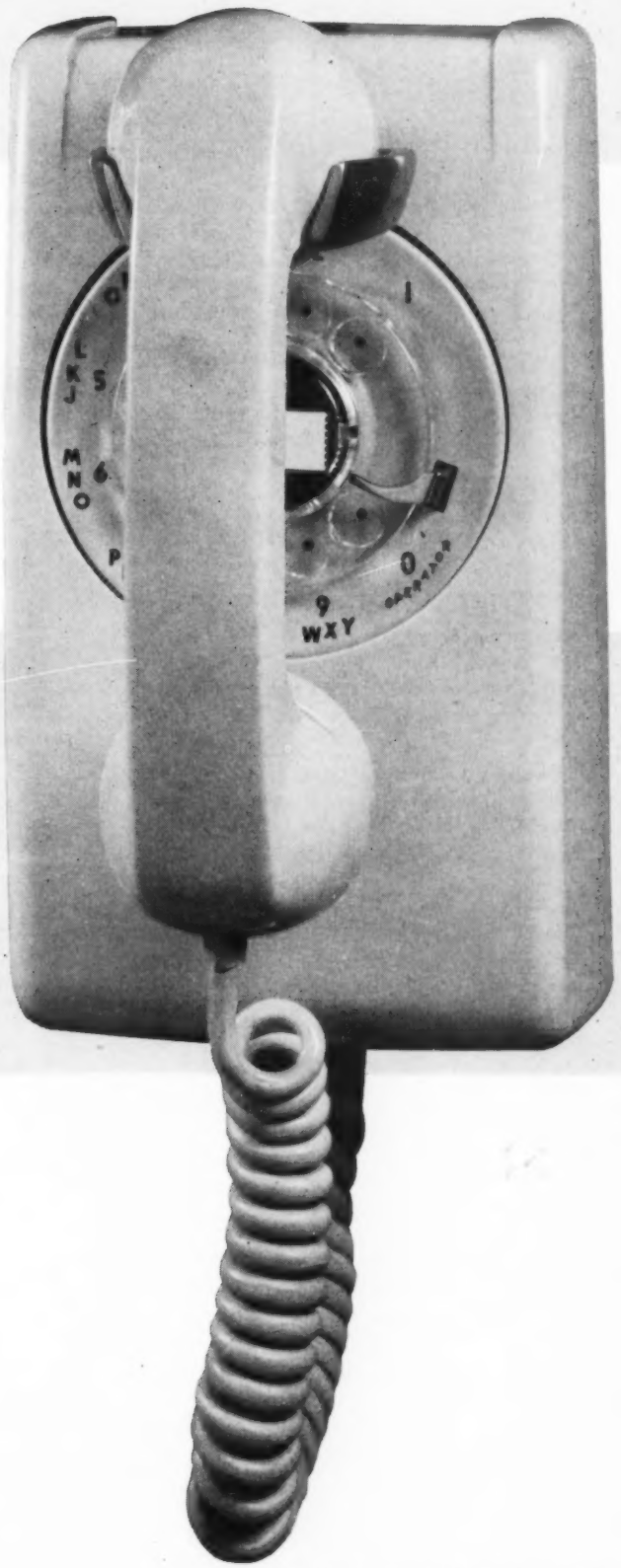
IN THEIR FAVORITE MAGAZINES,

JUST LIKE IT...

IT TO THEM



Your customers have been seeing an attractive new wall telephone in their favorite magazines. They have seen it in color ads, and in picture stories about kitchens and recreation rooms. That familiar, neat design is what your customers have in mind when they order a wall phone.

And now you don't have to sell them a different design . . . you can give them exactly what they want, the Kellogg K-500. It is available to you for immediate delivery in 8 decorator colors.

THE KELLOGG K-500 WALL PHONE IS AVAILABLE IN 8 COLORS

FLASHES AND PLUGS

ROBIN HOOD'S BARN. The telephone rang on the city desk of a Salt Lake City newspaper the other day, and a lady's voice asked if this were the place where news tips were received.

The reporter said yes, it was.

"Well, would you be interested in a barn full of hay," she asked.

Silence while the reporter pondered this. Then: "A barn full of hay, you say?"

"That's right, a barn full of hay," said the caller.

"Well, ah . . . what about it?" the reporter ventured.

"It's on fire," was the prompt reply.

•

MARS TAFFY BOILS OVER. The eastern New Mexico town of Portales was blanketed on Oct. 24 by a mysterious cobweb-like substance that fell from the sky. The silky threads, some of them 50 feet long, draped across telephone and power lines and created a nuisance in near-by corn and cotton fields where harvest is under way, reported the Associated Press.

•

MOON DIAL. Like much of the rest of the world, Vienna is now suffering from "satellitis," the desire to see, or at least hear, the artificial Soviet moon.

The Vienna telephone system, famous for diverse recorded information such as bedtime stories, an A-tone for musicians as well as news, weather and time, has now added the satellite "beeps" to its repertory.

By dialing 15-63, the Vienna population can satisfy the audio half of its curiosity, it is reported.

•

PUBLIC RELATIONS REPORT. Telephone companies are noteworthy for their service contributions to the community, but a unique effort along these lines is reported from Rockford, Ill.

The *Rockford Register Republic* reports that here the Illinois Bell Telephone Co. donates the strips and pieces of scrap lead left over from its extensive construction work, to police headquarters.

The lead is dumped into a melting pot and is then alloyed by police officers into target practice ammunition for the department, produced at a fraction of the cost of new gun loads.

•

GOOD OLD DAYS. "You know, dear," said Mama Bird to the Little Bird, "Back in the old days before microwave there were these dandy things to rest on called wires."

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

November 16, 1957

CONTENTS

TELEPHONE EXCISE TAXES MUST GO! 17
By Francis X. Welch

FIVE YEARS OF QUASI-PRIVATE OPERATION IN JAPAN 20
By Takeo Yoshizawa

DESIGN AND OPERATION OF SMALL COMPANIES—Part 5 22
By R. J. Pollock

THE PLANT MAN'S NOTEBOOK 24
By Ray Blain

TELEPHONY'S TRAFFIC ENGINEERING HANDBOOK 26
By Gilbert R. Brackett

MOUNTAIN STATES LOOK TOWARD SAFETY, LONG-RANGE PLANNING 32
By Frances E. Cretcher

TELEPHONE'S ROLE IN STATE DEVELOPMENT STRESSED IN NORTH CAROLINA 38
By Dan S. Fargo

COURTS AND COMMISSIONS 48

NEWS ON NEW PRODUCTS 70

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IN RECOGNITION OF THE U.S.I.T.A. KEYNOTE OF COOPERATION FOR THE ADVANCEMENT OF THE ENTIRE TELEPHONE INDUSTRY

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

to be independent is to be indispensable

The thinnest copper wire hums with man's speech. Hardly more than a hair in breadth, yet so strong. Like that wisp of telephone wire, you too — you, the Independent telephone company — have great strength. Your strength is your independence. Your existence as an Independent is a guarantee that competition in this country will continue to be free. Your strength as an Independent assures you not only the respect of the big companies, but their cooperation as well. Your service as an Independent does honor to our entire system of free enterprise. Stay strong. You, as an Independent, are indispensable to the American way of conducting its telephone business. Your strength is also our strength. Together, we as a supplier and you as a user of our equipment, have a mutual bond for the common good of our industry.

Two of the Sherron telephone booths enjoying great popularity among independent telephone companies

There's a Sherron booth for every location and budget, in either zinc-coated steel or stainless steel.

SEE OUR SPECIFICATIONS SWEET'S

SHERRON METALLIC CORP.
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PHILCO TLR-6

Provides Maximum System Reliability

Philco TLR-6 microwave provides economical transmission of NTSC compatible color or monochrome TV signals . . . plus full audio channel. Here is a completely modern microwave system . . . especially designed to meet the needs of community TV operators for thoroughly dependable operation.

TLR-6 delivers 1 full watt output. Heavy duty power supply insures outstanding operational reliability in continuous unattended service.

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Here is reliability of performance unaffected by severe weather, free from the many limitations of wire and pole lines, unhampered by problems of difficult terrain, over-water transmission or expensive rights-of-way.

Philco engineers will be happy to help you with your special Microwave requirements. Please contact us for further information. Look ahead . . . and you'll choose Philco.

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- Highly *reliable,* unattended one-watt operation
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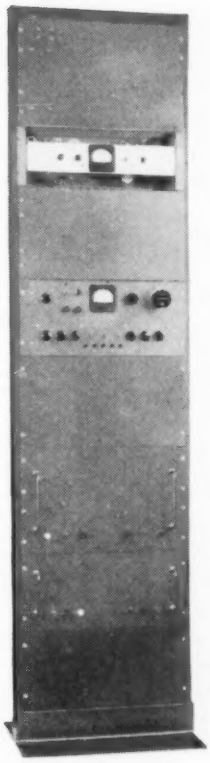
- *True* repeater permits top quality, long haul operation
- Highest power in the industry
- Full voice channel multiplexing
- Philco offers complete turnkey service . . . surveys . . . installation . . . maintenance



Write for Specification Sheet which describes the new Philco TLR-6 microwave system.

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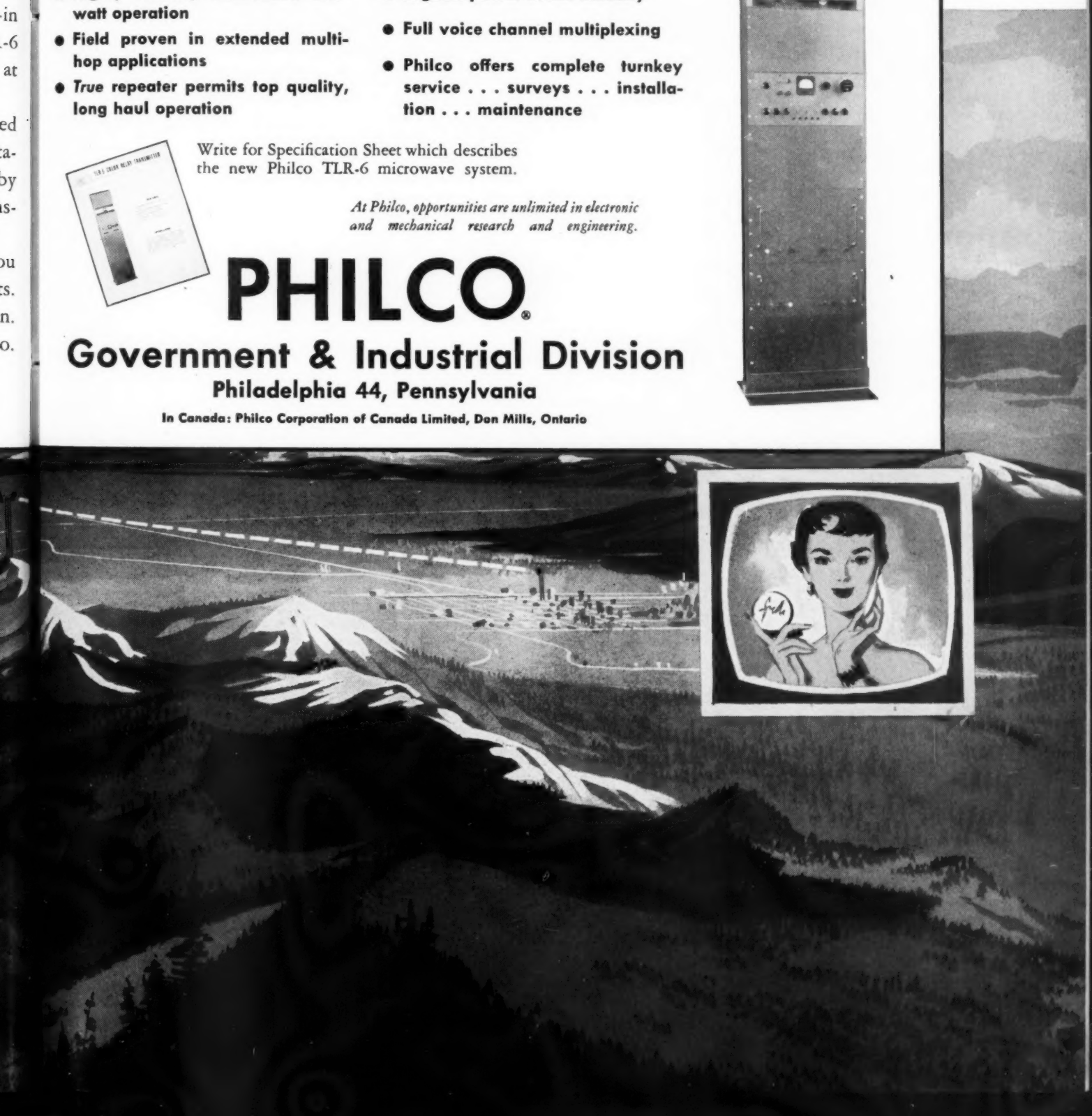

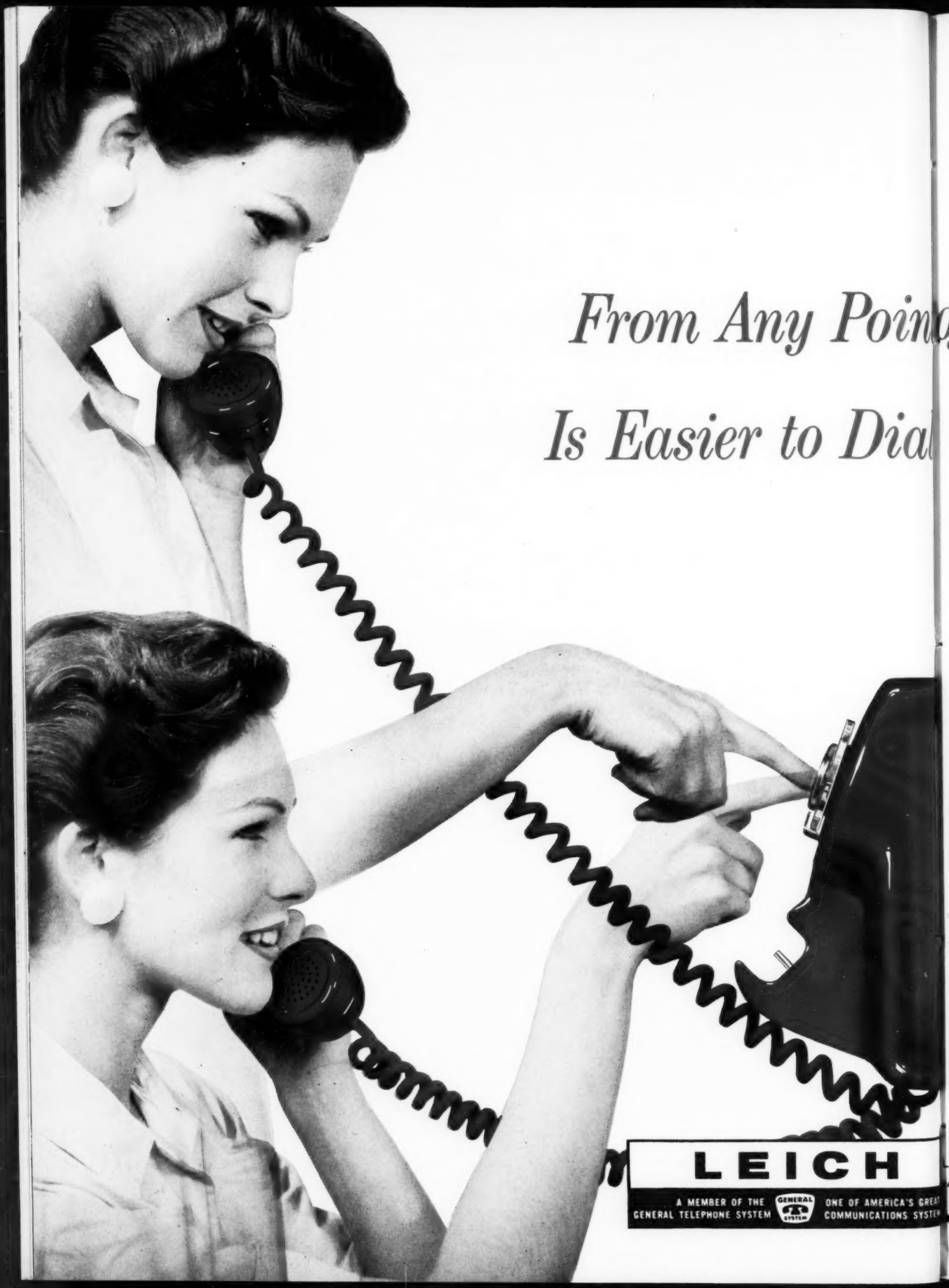
From Any Poino
Is Easier to Dia
LEICH
A MEMBER OF THE GENERAL TELEPHONE SYSTEM
GENERAL SYSTEM
ONE OF AMERICA'S GREA
COMMUNICATIONS SYSTE

in of View, the Leich Telephone

Because the Leich dial is mounted on an angle, it's easier to read from both sitting and standing positions

Some people like to sit down while they talk on the telephone. Others would rather stand up. The Leich 100 telephone lets them do both.

The angle of the Leich dial makes the difference. It allows you to mount the telephone lower on the wall — where your subscribers can read it while sitting. Yet because of the upward angle of the dial, it's easy to see while standing, too.

Some wall telephones have their dials mounted vertically. If the instrument is mounted low on the wall, it can only be dialed while sitting. If it's mounted higher, you can only dial it while standing.

The Leich 100 telephone solves this problem, and saves you money on inventory, too. You can use it as a desk telephone, as well as a wall installation. For desk use, you set it down. For wall mounting just turn it up and over.

Order convenient, flexible Leich 100 telephones today. They're available in black and 10 cheery colors.

The Leich 100 Telephone Serves for Wall or Desk Installation

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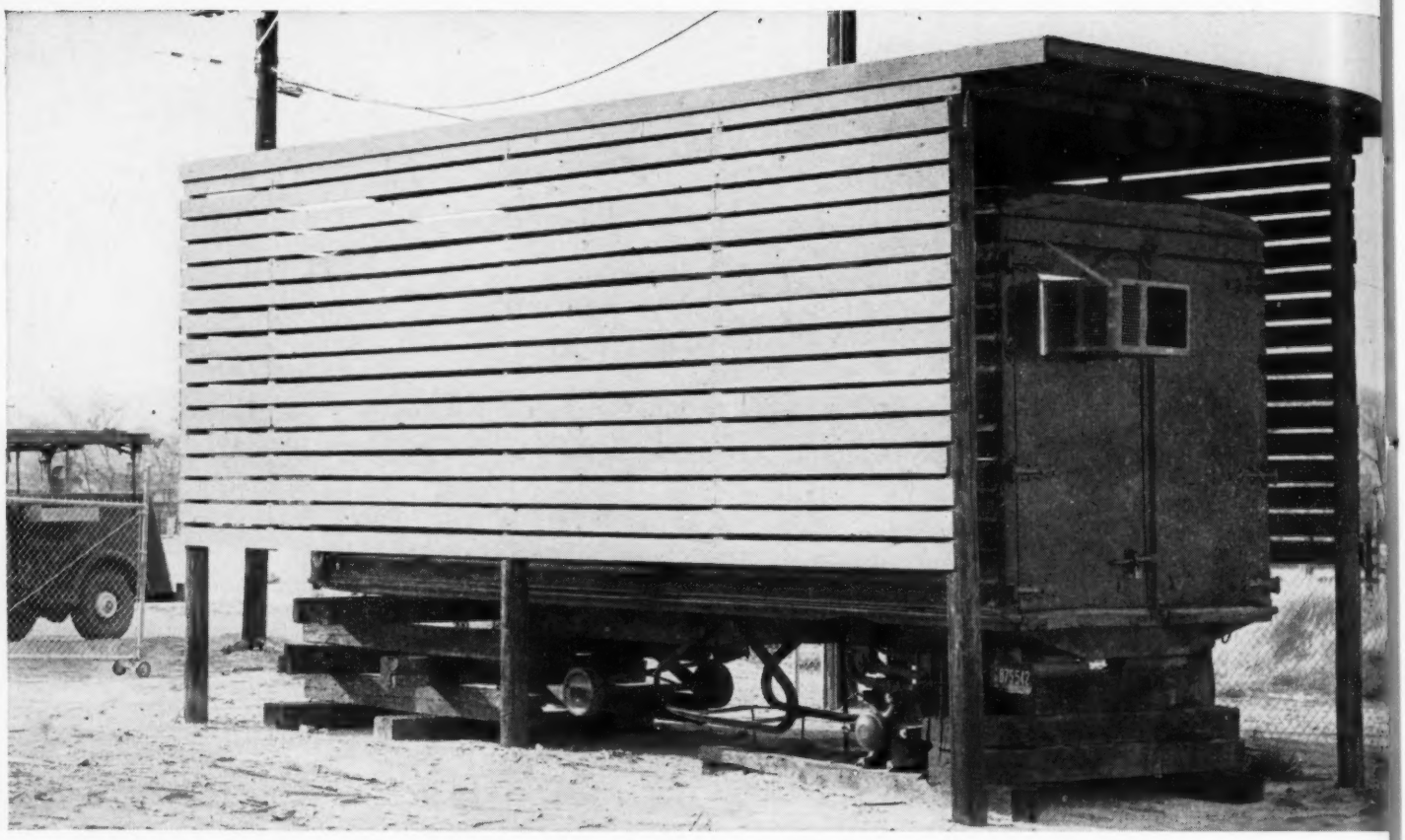
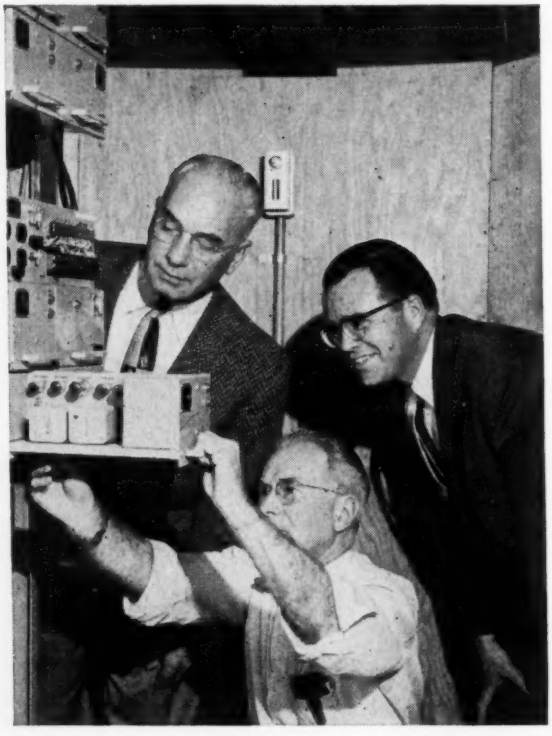


Lucerne Valley trailer in which 5 complete channels of Lynch B-120 subscriber line carrier equipment were installed.

First subscriber carrier installed in a trailer



helps meet 90-day cut-in deadline with 5 new circuits for California Interstate Telephone Company

When the Kaiser Permanente Cement Company planned their new $15,000,000 plant at Lucerne Valley, California, they asked Interstate for 5 circuits—*within 90 days.*

Since the nearest existing plant was twelve miles from the site, the situation called for some original thinking. Willard Wade, California Interstate's president, found a newspaper ad listing used trailers for sale. Immediately R. F. Nale, purchasing agent and J. F. Wegforth, central office engineer for Interstate, checked the trailers. They found one suitable to house subscriber carrier equipment, and Wally Kenney, Graybar Telephone Specialist, was called in.

W. C. Robinson (left), district plant superintendent, J. F. Wegforth (center), central office engineer, and Wally Kenney (right), inspect rural carrier equipment installed in the trailer.

In a matter of days, Graybar delivered 5 complete channels of Lynch B-120 subscriber line carrier equipment. This was installed and the trailer was hauled to its present location, Lucerne Valley. With the teamwork of everyone at Interstate, from the president down, plus fast staff work by Graybar, the unit was cut into service —on time.

Speaking of Graybar, Mr. Wade says: "The trailer-housed subscriber carrier is one of several 'firsts' established by the California Interstate Telephone Company. These would not be possible, however, without the excellent cooperation we have received from our suppliers, such as Graybar.

"We have enjoyed our relationship with Graybar for years. We have found that whether our problems are normal, routine ones, or completely unpredictable emergencies, Graybar people will always cooperate with us to the utmost."

Graybar is proud of its service to Interstate and other independent telephone companies in every State in the Union. For decades, we have supplied equipment to meet the specialized needs of independent telephone companies. Today, there are more than 130 Graybar offices and warehouses. In addition to pole line supplies, central office equipment, linemen's tools and safety equipment, more than 100,000 items of "everything electrical" help to make Graybar the working stockroom for many fast growing independent telephone companies.

Graybar Telephone Specialists and personnel are eager to work with you. Graybar, too, is an independent company, solely owned by its operating and retired personnel. You get *personal* service from people who have a *personal* interest in giving you the assistance you need.

747-2311

Willard Wade has been president of California Interstate Telephone Company for the past three years. Prior to that he was general manager. Mr. Wade has been in the utility business since he graduated from the University of Colorado in 1930. He is past president of the California Independent Telephone Association, has served as Mayor of the Town of Bishop.

Bob Nale (left), purchasing agent for California Interstate Telephone Company, listens to a suggestion made by Wally Kenney, Graybar Telephone Specialist, on an equipment purchase order.

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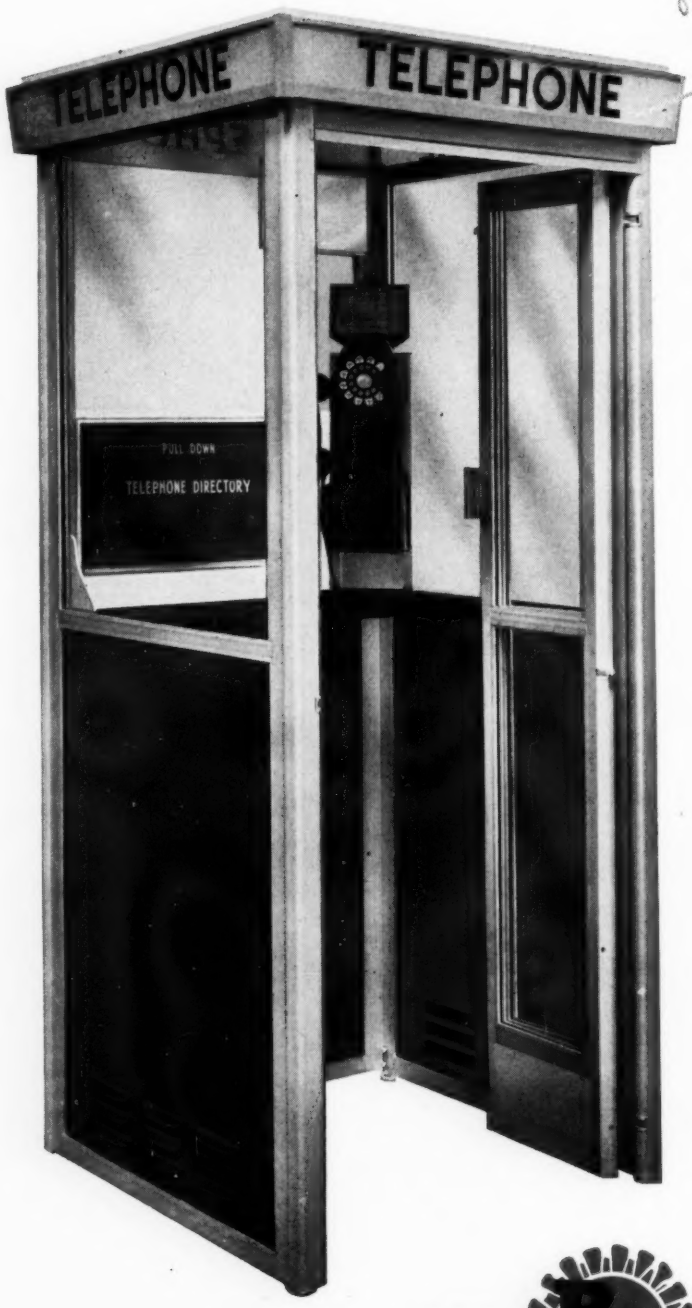
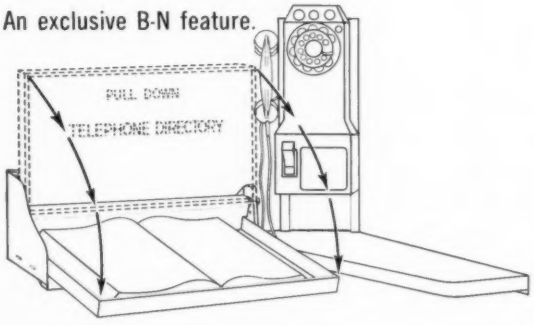


The New B-N "400"

Three inches wider and three inches deeper, the new booth includes all the previous "best" features **plus the best new booth idea in years:** a hinged, pull-down directory shelf which replaces the universal but extremely awkward chain hanger.

An exclusive B-N feature.



the B-N booth is best on all these counts

- ★★ PULL-DOWN DIRECTORY
- ★ ATTRACTIVE APPEARANCE
- ★ EASE OF ASSEMBLY
- ★ EASE OF MAINTENANCE
- ★ RESISTANCE TO RUST, STAIN, ODOR
- ★ LIGHTNESS OF WEIGHT
- ★ PROVEN DURABILITY
- ★ VERSATILE PANEL ARRANGEMENT

the B-N Booth

For full particulars, consult your distributor or write direct for folder... Benner-Nawman, Inc.
3421 Hollis Street • Oakland 8, California

a B-N booth is a busy booth!

Telephone Excise Taxes Must Go!

By FRANCIS X. WELCH, Telephony's Washington Editor

A financial tapeworm is eating up badly needed telephone industry revenues. Unless promptly removed, there is grave danger that it will become a permanent parasite and grow larger. It not only threatens the security of an essential industry, as such, but also imposes a direct burden on the telephone subscriber simply because he uses the telephone. Telephone people must work for tax repeal.

TAX COLLECTORS have never been very popular people. We read in the Bible of the contempt of the ancient Jews in Palestine for the tax collectors of the Roman Caesars. They were called "Publicans" and put in the same category with notorious sinners, lawbreakers and other disreputable persons. In ancient Egypt, tax collectors were sometimes tortured by subjects of the Pharoahs from whom they tried to collect taxes. They were sometimes tied to stakes in the open desert, smeared with honey and then ants were turned loose to devour them slowly.

So, it is probably a good thing, for people in the telephone business, that times have changed and that taxpayers no longer have such strongly critical ideas about tax collectors. Why? Because telephone people are tax collectors whether they like it or not. Everybody in the telephone business is a tax collector—in addition, of course, to being a taxpayer himself. True, he did not ask to be a tax collector, and may not even think of himself as a tax collector. But he is, because he is engaged in a business which is obliged by law to collect taxes directly from its own customers for the privilege of patronizing that business.

This is not the same as "hidden taxes" which every form of business must pass along as part of the price paid for its products in order to operate profitably. The telephone business has to do that, too. Every hidden tax on the equipment and supplies a telephone company must buy, or on the plant it must construct or maintain, has to be passed on to the subscriber in the form of an operating charge. But the telephone excise tax is entirely distinct and in addition to such hidden taxes which you, as a consumer, pay every time you buy a loaf of bread (estimated 151 hidden taxes, from the wheat field to the grocery counter) or an overcoat (estimated 116 taxes from the shorn sheep to the wolf in sheep's clothing). Such hidden taxes are the common lot of all modern mankind from the cradle (Birth Registration Fee) to the grave (State Inheritance Tax).

No, the telephone excise tax is something special and something mighty BIG, which must be collected over and above all those hidden taxes on telephone service. The telephone excise tax differs because it is a tax directly on the telephone user, as such. He has to pay it *because* he is a telephone user, and he has to pay the tax *to the extent that he uses* the telephone! That is a difference which makes the telephone excise tax so unpopular. And it is the most unpopular of all federal excise taxes, according to a Gallup Poll Survey of Public Opinion.

What, precisely, is an excise tax, anyhow? Some authorities trace the word to the Latin verb *excidere*, meaning to cut off or to cut out, in the same sense that a doctor may "excise" a part of your flesh and blood in a surgical operation. When Caesar sent his tax collectors into the hills of Rome to collect the annual "tenth tax" from all citizens of property he could find, the tax man literally cut off or cut out 10 sheep from every herd of a hundred and, similarly, a 10th of every other property he could lay his hands on.

This loot belonged to Caesar, minus a commission for the tax collector who made his living that way. It was his duty to bring the net proceeds back to Rome to support the empire.

Of course, the citizen might work out a deal with the collector, to pay the equivalent in money or other valuable property in exchange. And, it was in this way that many a smelly deal was cooked up. It explains why the ancient tax collectors got such a bad reputation and were so feared and distrusted. It is probable that the very word "per cent" is derived from early tax collections on the basis of every hundred units.

When European tax collectors first started to use the word "excise," in more recent times, it was usually applied to taxes levied on domestic products as distinguished from import and export duties and real or personal property taxes. In United States usage, however, the excise tax has come to mean a levy on the *consumer* of some specific product or service. It became mostly a consumer's tax, as distinguished from a hidden tax passed on by manufacturers, or processors through the wholesale and retail prices paid for their products when finally sold to the consumer.

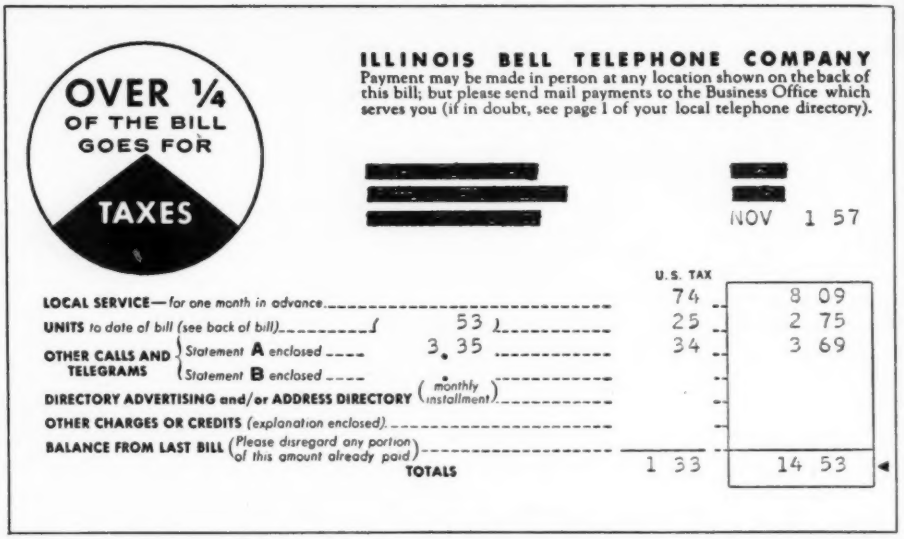
In the earliest days of our country, there were excise taxes and they caused plenty of trouble. The "whiskey rebellion" during the second administration of George Washington was the

first example of organized insurrection by the citizens of the new republic. This was an open revolt by Pennsylvania and Carolina farmers, who hotly resented a federal excise tax on home distilled products. This happened 18 years after the Boston Tea Party—another unpopular tax.

Since then, and until very recent times, federal excise taxes in the United States were restricted to non-essential or even luxury items—whiskey, tobacco, and such. The idea seemed to be that poor people could do without these things, if they had to, and probably would be better off if they did. Those who could afford them could afford to pay the excise tax.

That is why the change in federal policy on excise taxes, which has resulted in the telephone tax, is so difficult to understand. Alexander Hamilton, in one of his letters on taxation, expressed the view that, because of their unpopularity, excise taxes should be levied not so much for revenue as to bring about government or social reforms. If whiskey consumption were somewhat discouraged by an excise tax, that would not be so bad. But if the government tried to tax a real necessity, it might well provoke a civil war.

Yet, telephone and telegraph service, with the exception of gasoline, is the only major essential service or product which is subject to federal excise tax today. The other excises are mostly confined to luxury or at least dispensable items—furs, cosmetics, liquor, tobacco, jewelry, entertainment, night clubs, etc.


OVER ¼
OF THE BILL
GOES FOR
TAXES
ILLINOIS BELL TELEPHONE COMPANY
Payment may be made in person at any location shown on the back of this bill; but please send mail payments to the Business Office which serves you (if in doubt, see page 1 of your local telephone directory).
NOV 1 57
U.S. TAX
LOCAL SERVICE—for one month in advance 74 8 09
UNITS to date of bill (see back of bill) 53 25 2 75
OTHER CALLS AND TELEGRAMS Statement A enclosed 3.35 34 3 69
Statement B enclosed
DIRECTORY ADVERTISING and/or ADDRESS DIRECTORY (monthly installment)
OTHER CHARGES OR CREDITS (explanation enclosed)
BALANCE FROM LAST BILL (Please disregard any portion of this amount already paid)
TOTALS 1 33 14 53

Illinois Bell Telephone Co. uses its monthly bills to bring to the attention of its subscribers the proportion of their total bills that goes for all kinds of taxes. The circle in the upper left corner is printed in red. A similar method could be used to pin-point the excise taxes that are paid on telephone service, during the fight to bring about their repeal.

When Telephone Tax Began

The excise tax on telephone service really began in 1932, during the great depression, when the federal government felt the need of additional sources of tax revenues to finance the public works projects and other social services which were started at that time. Prior to that, telephone and telegraph service had never been taxed, as such, with the exception of the period during World War I and a few years thereafter, starting in 1917. This was admittedly a temporary wartime expedient. It was only five cents per message in excess of 15 cents toll (doubled after 1919 on messages in excess of a half dollar). They were repealed in 1924.

In 1932, the telephone tax was imposed on an industry harder hit by the depression than any other public utility service. It was a graduated tax, from 10 to 20 cents per message on toll calls from 50 cents to $2.00 or more. No tax was imposed on monthly bills for exchange service.

It is perhaps fair to say that the burden of this depression tax was at least partially responsible for the heavy loss of patronage (about 3½ million subscribers or 15 per cent of all subscribers) which the telephone industry suffered during the three depression years. This went on for nearly a decade.

In the year 1941, two months before Pearl Harbor, Congress started to pile more excise taxes on the telephone subscriber—6 per cent on monthly bills, which was boosted to 10 per cent the following year of World War II, and to 15 per cent during the Korean War. Under the ostensibly peaceful years of the postwar Eisenhower administration this has only been cut (in 1954) by a third—to 10 per cent. The World War II message tax on toll calls likewise climbed from about 10 per cent in 1941 to a peak of 25 per cent in 1944. This peak lasted until 1954, a whole decade!

Since then, it has likewise been reduced to a flat 10 per cent.

Why Tax Telephone Service?

As long as the nation was at war, or under heavy economic strain to supply combat forces abroad, there was at least a fig leaf of justification to cover an otherwise shamefully discriminatory tax on the users of telephone services. There was need, during those years, to cut down on non-essential telephone traffic. There were shortages in both manpower and critical materials needed to supply both the nation's war effort and maintain telephone service. Any expansion of plant which could be avoided or deferred by taxing the consumer's use of the service was some reason for such a tax. It might be compared in a rough way to the old idea of discouraging the excessive use of non-essential commodities, such as tobacco.

But, surely today, 12 years after the cessation of hostilities, there is no longer even a shred of such justification for continuing a 10 per cent tax on telephone users. The telephone excise tax is doubly discriminatory.

First, it singles out the telephone business from other non-luxury business for special consumer taxation.

Second, it does not even apply the same tax rule to other public utilities, which could properly be compared with respect to the nature of their service.

There is no tax on consumers of water, of gas, of electricity. Yet, is there anything peculiar or characteristically different about the essential use of telephone service in the modern American home, which distinguished it from all these other utility services in the same home?

There are those, of course, who will point to the need of our federal government during these critical times for all the tax revenues it can get. Admittedly, the telephone excise tax is a good revenue producer. But, by that very fact, it should stand condemned as a burden wrongly imposed on a special class of people in a wrong way, instead of being honestly placed on a fair and square basis of a necessary government tax for revenue requirement.

During the year 1956, the communication excise taxes (which include those on telegraph messages and cables) amounted to more than a half billion dollars (574 million dollars to be exact). This is more than $9.00 for every telephone in service per year or 75 cents a month. Congress has already recognized the special burdens

created by some other excise taxes and has reduced some of them this year.

Another unfair and discriminatory feature of the telephone tax lies in the levy on long distance messages. A great many telephone subscribers live in rural or sparsely populated areas removed from centers of population. And, their use of the telephone consists, in large part, in long distance toll traffic. For many, the payment of a local exchange monthly bill is simply a necessary prerequisite to obtaining toll service which they use almost exclusively. Yet, Uncle Sam levies on every toll message a flat 10 per cent ad valorem tax over and above the 10 per cent tax on the monthly exchange bill.

The telephone tax can not even be justified as a compensatory tax. That is to say, it does not back or help to pay for any government expense incurred in connection with telephone service. It differs, in this respect, from gasoline taxes, the only other major non-luxury excise levied directly by the federal government on the consuming public.

The proceeds of gasoline taxes, as we all know, are needed to help both federal and state governments to defray the cost of vast road building programs as well as highway maintenance. This is for the direct benefit of those who use the highways even as they use gasoline—automobile and truck users. Farmers and fishermen who use gasoline independent of highway use are granted exemptions.

Compare this tax treatment of gasoline consumers with the tax treatment of telephone users. The federal and state governments did not have to lay out a plugged nickel to establish and maintain the nation's telephone service or to maintain it. It was all done and is still being done by private enterprise.

In other words, telephone users are being taxed for government purposes which have nothing whatever to do with telephone service, simply because they *are* telephone users. It is not a compensatory tax in any way. The government might with equal justification (or lack of justification) tax people who eat fish, or wear a certain color of clothes, simply because they like fish or a certain color clothes.

Danger to the Industry

Enough has already been said about the unpopularity of a tax collector to suggest that the telephone industry, as such, is being pretty badly used as a result of the excise tax. It is obliged by law to pass the plate for Uncle Sam, yet does not get a penny in return—notwithstanding considerable expense of collections. At least Caesar's Publicans got a commission. The telephone company only gets dirty looks.

The dirty looks come from the subscribers. It is only natural that, regardless of how clearly and often this consumer tax is set forth separately from the charge for telephone service on the consumer's bill, the subscribers still feel that they are paying the telephone company for the whole deal. And, in a way, the subscriber is right—because that is what the service costs him to use, regardless of what it costs the telephone company to deliver—aside from the tax.

This makes it very important, of course, for telephone company and for employes to stress constantly the real fact that *this is a tax on the telephone subscriber!* It is not a tax on the telephone company or on its operations. The telephone company is only the unwilling collector.

There may be a few, even in the telephone business, who wonder whether this role of tax collector gives the telephone industry any kind of security. It does not. It only makes the job of the regulatory commissions that much harder in fixing rates. And, of course, it makes the telephone company's task of maintaining good public relations much more difficult.

Any telephone man or woman who thinks that the services performed by the telephone industry in collecting this tax revenue has given the telephone companies any special position of favor in Washington, need only come to Washington and talk to a few congressmen. They will find out that there is little or no political gratitude for the unwilling tax collector.

Finally, there is a comparatively recent development which makes the removal of the telephone excise tax all the more urgent at this time. That is the plan recently recommended by the Federal State Action Committee, a group of top federal officials, headed by Secretary of Treasury Anderson and 10 state governors. This group has recommended a plan for delegating the collection of local telephone excise taxes by the states in return for the assumption of social responsibilities now borne by the federal government.

This is a most disturbing development. It means the switching of tax authority from one centralized Congress (which may be prevailed upon to repeal this tax) to 48 different state legislatures which will probably never repeal it. Some might even get so used to the idea that they would increase it.

Before this happens, it is incumbent upon all telephone men and women to put their shoulder to the wheel and seek early and favorable action in Congress for the repeal of this unjust tax. It is a case of now or never.

If the state legislatures ever get this gold mine in their hands, it is a pretty safe bet they will never let go of it. And, that would be a fraud committed against the American telephone subscriber. These taxes were levied with the idea that they would be temporary—that they were for an emergency. The emergency has passed and the taxes are still with us. They represent a financial tapeworm gnawing at the vitals of every telephone company in the United States. If they are not removed, and removed soon, the tapeworm will become permanent and is even likely to grow larger in years to come.

What to do? The answer to this is clear. There are three ways. And all three should be exercised.

First, contact your senator or congressman while they are still back home. Seek their sympathetic interest in removing this tax when they come to Washington next January. (Also, write to members of the House Ways and Means Committee, listed in an accompanying box.)

Second, get in touch with the chambers of commerce and other service organizations and have them adopt resolutions and write letters to Congress. Many state legislatures and the Na-

(Please turn to page 58)

House Committee On Ways and Means

Jere Cooper, Chairman, Tenn.
Wilbur D. Mills, Ark.
Noble J. Gregory, Ky.
***Aime J. Forand, R. I.**
***Herman P. Eberharter, Pa.**
Cecil R. King, Cal.
Thomas J. O'Brien, Ill.
Hale Boggs, La.
***Eugene J. Keogh, N. Y.**
Burr P. Harrison, Va.
***Frank M. Karsten, Mo.**
***A. S. Herlong Jr., Fla.**
Eugene J. McCarthy, Minn.
Frank Ikard, Tex.
Thaddeus M. Machrowicz, Mich.
Daniel A. Reed, N. Y.
***Thomas A. Jenkins, Ohio**
Richard M. Simpson, Pa.
Robert W. Kean, N. J.
***Noah M. Mason, Ill.**
***Hal Holmes, Wash.**
John W. Byrnes, Wis.
Antoni N. Sadlak, Conn.
Howard H. Baker, Tenn.
Thomas B. Curtis, Mo.
***Members of Sub-committee on Excise Taxes**

Young woman talking over one of Japan's 60,000 new type paystations. The Japanese complete more local and distance telephone calls than any other people except citizens of the United States.

Five Years of Quasi-Private Operation in Japan

By TAKEO YOSHIZAWA*

IN AUGUST, 1952, the Japan Telegraph & Telephone Public Corp. was established, replacing the Ministry of Telecommunications, and marking the first attempt of the people of Japan to enjoy the benefits of private operation of their telephone and telegraph system.

From the time of the organization of the system about 60 years earlier, the offering of telephone and telegraph operation service had been a prerogative of the government. The operation had been conducted under what might be described as cabinet, or ministerial, directives.

There were many complications, and one was that the telephone and telegraph system had to compete with other governmental agencies for money each year. Other complications came from trying to operate what was essentially a commercial business under regulations designed to direct and control the operation of non-profit-making ministries, such as those of war, navy, finance, home affairs, etc.

The Japanese Telegraph & Telephone Public Corp. is still not fully independent of control. It differs from other government agencies, however, in having a degree of financial and administrative independence. In the business world, it stands somewhere between private operation and government operation.

As director of the Business Operations Bureau, my responsibilities are similar to those of general commercial manager of a telephone company in the United States.

At present we have about 3.6 million telephones in operation. Over 1.5 million have been added in the past five years. In the next 5 years, we plan to grow at an increased rate. There are four countries that exceed Japan in telephones—United States, the United Kingdom, Canada, and Germany; we exceed all other countries.

Our telephones are, on an average, the busiest on earth. We complete more local and long distance calls than any

*Mr. Yoshizawa is Director of the Business Operations Bureau of Japan Telegraph & Telephone Public Corp. He was a member of a 10-man mission from Japan which recently visited American telephone operating and manufacturing companies.

other nation except the U.S.A. One of the reasons our telephones are so busy is that about 90 per cent are installed in places of business. We are trying to extend the service so that residences may have them, too.

America owes its tremendous telephone development more to residence service than most people realize. Children in homes learn to depend on the telephone, and when they grow up, of course, they must have service in places of business. In many countries where residence telephones are uncommon, youngsters are unaccustomed to the convenience of telephone service, and, in the future, they may even try to run their businesses without it.

We have made an intensive effort in the past five years to improve service for everyone. We still are short of our goal, but are making progress. One of our problems is that the installation charge is rather high for residential subscribers.

As an example, in the city of Takasaki, which has a population of 105,000, there are 4,000 telephone subscribers. The official installation charge for a telephone is $136.90. The monthly base charge for a measured rate individual line, is $1.70 for business, and $1.20 for residence. In addition, users pay seven yen (two cents) per call.

The monthly rate must seem low by American standards. However, remember our income averages far less per capita than yours. To our people, the rate seems high enough. Our installation charge must appear big even by U. S. standards.

If the installation charge were dropped, however, to say $5.00, we would be flooded with applicants; far more than we could handle. Instead of having only 213 held orders in Takasaki—our present figure—we might have 10,000 within a month.

We do not have enough available capital in Japan now to expand our plant to serve all the people who would want telephones if our installation charges were reduced to the same level as you pay in the U. S. We cannot borrow much more each year than we do now. Interest rates on our bonds yield about 7.5 per cent. The interest rate on prime commercial loans at banks averages over 9 per cent. It is expensive to borrow money and build telephone plant anywhere, and Japan is no different in this regard than other countries.

The charge for telephone service in our large cities is higher, of course, than it is in Takasaki. There are in Japan, as in America, complications in a metropolitan area as regards rates. Probably the easiest way to compare, say, Chicago and Tokyo, is to state that when all things are considered, including message call charges, special fees, monthly rentals, etc., the monthly bills run about the same. Howard Van Zandt, an American telephone executive who lived in a suburb of Chicago for many years and who now resides in Tokyo, reports that his telephone bill has, for the past 15 months, averaged the same in Tokyo as it did in the previous 15 months in River Forest, Ill. His calling habits—and those of his family—would seem to be the same in Japan as they were in Illinois. His case is typical of many we have studied.

Since the American telephone system is noted for its amazing efficiency, we are not embarrassed by discovering that the bills in our big cities run about the same as in the U. S.

In our efforts to give better service, we have considerably increased our public telephones. At the end of the war there were only a few hundred paystations left operating. During the next five years we were inflating, and as our coins disappeared from circulation, normal pay telephone service became impossible. For several years we operated under an honor system whereby users deposited paper money in slots in the "coin" telephones instead of coins.

This worked all right until inflation made obsolete the one yen paper note used for the fee. Since people no longer carried one yen paper notes, they being unobtainable, deposits were, shall we say, euphemistically, "overlooked" in the honor system telephones. (The next higher note in common circulation was 10 yen, and people did not want to overpay that much). In due time, inflation slowed down and we came again to have good coins.

With the return of coins, we added regular paystations as rapidly as they could be manufactured and installed. There are now over 60,000 in operation. We hope to more than double that number in the next five years. We have a new type of coin telephone instrument of which we are proud, and which the public regards with affection. It is smaller than yours, and fits nicely on the counters of shops. We paint most of them Chinese (non-communist) red.

We have tried to increase the number

(Please turn to page 61)

[**EDITOR'S NOTE.** *We have been following with great interest the progress of Japan's telephone system since it was changed five years ago from a completely government owned and operated system to one under quasi-private operation.*

Our interest stems from conferences TELEPHONY*'s editor had with members of the Japanese Diet Committee several years ago when they were studying the American private enterprise telephone industry with the view of reorganizing the Japanese telephone system, as well as previous visits with other Japanese telephone officials.*

We are grateful that the sponsors of the legislation calling for the reorganization saw fit to read into the record of the Diet hearings various articles and editorials from TELEPHONY *having to do with the success and operation of the U. S. telephone business under private enterprise.*

We congratulate the telephone leaders of Japan and wish them success in any future undertakings to place Japan's telephone system under full private operation.]

The author and R. C. Reno, TELEPHONY editor, discuss an article in this publication's pre-convention issue at the recent USITA convention in Chicago. Mr. Yoshizawa expressed the appreciation of the Japanese for the help and cooperation they have received from Americans in rebuilding and expanding their telephone system.

Design and Operation of Small Companies

By R. J. POLLOCK

Part 5
Selection of Building Site

FUTURE planning will, to a large extent, determine the size and location of a proposed central office site; however, consideration must be given to some very important factors.

The amount of floor space planned for commercial operations should cover future requirements, which could demand considerably more area than that in use at the present time. Perhaps doubling the number of present customers would not seriously affect the floor space required to serve them, even if other functions, such as accounting, were performed in the same building. However, it appears very probable that most telephone companies will be inaugurating merchandising and selling programs, if they have not already done so, which might result in an abnormal future increase in subscribers and equipment, making it necessary to consider a larger area.

This will be discussed more in detail in a future article and is brought out here only to emphasize the importance of securing sufficient ground to accommodate the size of building required to take care of foreseeable growth.

This possible growth was, no doubt, studied in connection with the Potential Service Possibilities outlined in the first article of this discussion (TELEPHONY, Oct. 12), and it would be advisable to review this study covering increasing population trends, new and enlarged local general business operations, and any other situations which would tend to increase employment.

If these trends are above those experienced in the past, additional residences will be needed which could result in new housing developments beyond the corporate limits of the community.

Such developments probably would result in the establishment of additional enterprises to supply the increased population, which, in turn, would increase the demand for additional telephones, outside plant, along with sufficient central office building capacity to house any additional equipment which would have to be added from time to time to take care of the expanded service.

Of course, any ground space purchased and held for future building expansion could be costly when the carrying charges are considered over a period of years, if the additional land is not used in company operations. However, these charges could be offset by using the vacant property for the parking of company vehicles, which would result in increased operating efficiency and reduced labor costs with the elimination of the unproductive time employes would take in walking to and from a distant parking location.

Temporary or semi-permanent garage and storeroom facilities could also be set up to house company vehicles and supplies if that procedure is in accordance with local government ordinances. If public storage facilities are presently being used, the advisability of this procedure is evident when the storage rates per vehicle are considered.

While it would require a change in the investment account covering the cost of that portion of the land reserved for future expansion, it could, in many locations, be rented or leased for public parking. In many cities, the income derived from this source would probably reflect a good return, despite the various additional taxes which might be encountered.

The size of the exchange involved could conceivably support an exchange building of more than one story which could be erected on a smaller plot of ground than would be necessary for a one-story building. However, the comparison of the additional costs necessitated by that type of construction, compared with those of the additional land for one-story construction, would be one of the determining factors governing the choice.

Community pride in the appearance of business buildings, particularly if they are located in residential areas, may necessitate additional space for landscaping, all of which would result in added costs.

The cost of property has increased considerably during the past and will, no doubt, continue to rise in the future if our economy continues to expand. Therefore, it would be wise to consider the purchase of additional land which forecasts would indicate is required for future expansion at the time the exchange is reconstructed, rather than be faced with higher prices later on. The availability of the necessary money required to purchase property for future expansion might determine the feasibility of the purchase. However, if possible, a desirable location should be purchased when it is available, even though it is well in advance of the date when it will actually be used for telephone purposes. Failure to do so could mean that later on the company might have to take a less favorable site where the cost of rendering service would exceed the interim carrying charges.

The purchase of a corner lot might facilitate a more economical building plan, but it would add additional costs which would increase the capital investment and the annual maintenance charges. Such property could be subject to considerable future improvement assessments such as for pavements, sewers, sidewalks, water mains, etc.

Another basic consideration in selecting a building site is its proximity to the main cable feeder routes. If these routes are partly composed of underground facilities, the new site should be located as near as possible to them.

However, if existing conduit does not contain sufficient duct space for additional cable which must be installed, the costs of tearing up permanent pavements, along with costs for moving other "foreign owned" facilities buried under the street, might make it wise to abandon a portion of the existing conduit in order to reach the new building site.

While the wire center plan may have been established during the original exchange construction program, present-day conditions, such as housing developments and outlying business locations, may have made the old plan obsolete. This possibility should be reviewed in light of existing conditions, along with anticipated future changes.

The availability of water and sanitary sewer facilities at the proposed lot location will have a definite bearing on the cost of the site, since their absence could entail considerable additional expense later on. In a case of this kind,

considerable resentment could originate from adjacent property owners, especially if they did not receive any direct benefits and were required to carry part of the cost of extending these facilities to the new telephone building site.

The cost of future street improvements should also be considered although they usually are reflected in the cost at the time the property is purchased.

The purchase of property adjacent to the heavily populated business district, rather than in the district, appears to be advisable, since, generally, the price is lower and additional footage is more readily available. While this plan may not be as convenient to customers who pay their bills at the office, it will facilitate better parking conditions for those using private cars for transportation.

Fire hazards from adjacent structures usually decrease as the distance from the business center increases. This factor should be given consideration, especially if a number of desirable locations are available.

Also, in the majority of cases, it will be less costly to reroute feeder cables to a location adjacent to the main business district, either on an underground or aerial basis. Future cable damage should also be decreased because of the reduced traffic at locations outside of the business district.

The existence of a building on a proposed site could result in a decision not to purchase that property because of price and/or the cost of removing the existing structure.

However, before a decision is made, a study should be undertaken to determine the cost of moving the existing structure to a new location, as compared with demolishing it.

Generally, if the structure is sound, and is not obsolete as far as its design is concerned, contractors and others can be found who will purchase it and move it to another location. The amount received for it should be in line with the existing local value, less the moving costs, including those incurred by the utilities in rearranging their facilities to accommodate the moving operation.

In most cases, a piece of property which includes a building will demand a higher price than a vacant lot. The exception to this is where the building is approaching full depreciation.

The above discussion covers the considerations involved in securing sites for central office buildings in which all company operations are to be carried on; however, the factors involved in selecting sites for small unattended Community Dial Offices (CDO), are entirely different.

Here, the size of the lot required can be considerably smaller and it can be located on alleys or back streets where property values are considerably lower. The amount of available property for this purpose is greatly increased since a plot of 50 feet by 50 feet will, in the majority of cases, supply ample space for a building to house a 600-line automatic service unit. A smaller plot will be satisfactory if a smaller central office unit will meet the ultimate service requirements.

Plots of this size are more readily available in alleys and are more accessible for feeders, cables, and electric facilities. The building construction cost will be lower, since it is not necessary to conform with costly architectural requirements and building codes which usually exist for buildings in business districts and along residential streets. While fire hazards may be more prevalent in an alley location, the size of the lot, compared with that of the building, and its type of construction, will result in considerable vacant space between it and adjacent buildings, greatly reducing the possibility of fire damage.

The size of the cable feeding an unattended office has a bearing on the selection of a building site beyond the business district and heavy traffic routes. Here, the additional cable cost incurred to reach the new site normally should be less than the higher priced plot nearer the wire center of the community.

The sub-soil and drainage conditions of the new site should be studied in the light of possible adverse conditions which might be encountered during and after the proposed building has been constructed. If this is not done in advance of the purchase date, construction difficulties could be encountered in placing the foundation footing which would require a large additional expenditure. If the surface drainage is not favorable, the cost of correcting the condition could also be abnormal.

A complete and detailed study of all zoning ordinances in the community, as they affect the proposed site, must be made before entering into any purchase negotiations. This study should include any other ordinances which might adversely affect the operation of the telephone company at that location.

In the purchase of any real estate, a competent lawyer should be employed to handle all the details, beginning with the original contract to purchase. However, a discussion here of some of the factors involved in purchasing property might be of help and interest to owners and managers of small telephone companies.

The price to be paid for any plot of ground in any community will be determined by the economic conditions prevailing there and the location of the plot. The price of a lot in one block may vary from that of a lot in an adjoining block because of extenuating circumstances, all of which should be considered before a final decision is made.

As previously discussed, in the planning stage contact should be made with county offices, abstract people, or others who might have been involved in recent land title transfers in order to determine existing land values. This course will permit the purchase negotiations to be carried out on a more equitable and realistic basis.

Any agreement on a price to be paid for land should be a written one and it should be accompanied by a down payment of money, commonly referred to as earnest money, if it is requested by the seller. This agreement can be termed an option to buy which should acknowledge the receipt of the earnest money by the seller and give the legal description of the plot to be purchased.

Many sellers will demand that a time limit for taking up the option be designated in the agreement, and also that, if the transaction has not been completed by the expiration of the time limit, the earnest money will be forfeited.

The buyer should also insist that the earnest money be returned if the seller cannot supply a clear title. Usually, abstract costs and a proportion of the current year's real estate taxes are also agreed upon, where the seller assumes complete liability for the former, with the latter being divided according to the date of the sale.

The cost of having an abstract brought up to date is small if the property has recently changed hands and the buyer had it checked for title continuity.

However, in those cases where a considerable number of years have elapsed since the last entry, even though no transfer of ownership was made, a complete check of the county records must be made by an abstract company in order to establish the fact that the seller has a clear title. Many conditions could have occurred which could becloud the seller's title to the property, which, later on, might require legal expense and possibility the outright purchase of claims against the property by the buyer.

An accepted legal procedure is to secure an affidavit from the seller, which has been duly signed, dated and wit-

(Please turn to page 52)

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

OUT IN Pasadena, Cal., the Pacific Telephone & Telegraph Co. has installed 100 new-type telephones to determine which of three new designs the customers like best.

The three telephones to be tested will be the new lightweight "bedroom" telephone, the Swedish-manufactured Ericofon, sold in this country by the North Electric Co., and an experimental dial-in-handset telephone.

This telephone preference test, we understand, is a joint project of Pacific Telephone & Telegraph Co., and the customer products planning division of the AT&T Co. The trial is being made to determine the relative popularity of the three new-type telephones.

An effort will be made to determine the preferred location of the dial, what features are preferred or disliked about each instrument, and whether any of the three instruments proves to be most suitable for a specific room in the home.

The 100 Pasadena customers and another hundred in Oakland and San Leandro in northern California will be picked at random. They will have their present telephones replaced each month by a different trial instrument.

Toward the end of each month's trial period, the customers will be interviewed to get their reactions to the use and design of the telephone. At the end of the three-month test they will be queried for comparative reactions to the three experimental telephones. All of the telephones used will be ivory, so color will not affect the customers choice.

•

We are in receipt of the following query from Ralph M. Hyle, president of the Lycoming Telephone Co., Pine Grove, Pa.:

"Due to the recent change in telephone accounting methods, we find it necessary to mark the year in which each of our telephones went into service. Can you suggest some simple, yet lasting, method of marking the base of these telephones in order that they may be easily identified?"

We must admit that we are "fresh out" of ideas on the subject. Will some of our readers please come to the rescue?

•

It is reported that some elderly ladies, who are permanent guests of Indianapolis' Marott Hotel, heard some strange awks and beeps on their hearing aids recently. It developed that a new radio system, being installed in the hostelry, was on the same frequency. The ladies had their hearing aids adjusted to another frequency.

•

The first book ever published on the subject of "stereophonic sound" may be obtained from John F. Rider Publisher, Inc. It sells for $2.25 and provides all the information that the hi-fi fan needs to add this new dimension to his listening pleasure.

In an easy, interesting style, the author explains the theory of stereophonic sound; the difference it can make in listening pleasure; what goes into making it successful, and various systems available or likely to be available.

He covers such systems as binaural, two and three-channel stereophonic, stereosonic, coded-stereophonic, and the use of these systems with radio, disc, tape and other "media." This information is applied to selection and placing of speakers for the best home stereo reproduction.

This book may be purchased through TELEPHONY.

•

We have a letter from a cable splicer who contends that he can close a splice on lead better with a Prest-o-Lite torch in less time and do a better job than is possible by the wiping method. The sleeve is first beat in and then closed and made gas-tight by the use of 38-62 stearine core wire solder.

Personally, we have always considered the torch method of closing splices in lead cable to be entirely satisfactory. It is believed, however, that the use of an open flame torch in a manhole can be dangerous.

We invite the opinions of our readers on this subject.

•

TELEPHONY received the following letter from Dermot K. Foley, cable splicer of Inglewood, Cal., after he had received and read the Pre-Convention issue that commemorated the 60th anniversary of the Independent telephone industry:

"Have just now finished reading the September 28 issue of TELEPHONY and want you to know that I enjoyed every line and every page of it. Your stable of staff writers, Ray Blain, Francis Welch and Mayme Workman, really outdid themselves this time.

"Their articles will bring a tear to the eye of many of your readers, who, like myself, having spent a lifetime in this fascinating business of ours, are proud of the part we played, however minor it may be, in the advancement of the art to its present state of perfection.

"I have subscribed to TELEPHONY continuously since September 1930 and have not missed reading an issue cover to cover in over 27 years. My copies are passed on to friends in the telephone business in Ireland, England and Australia; there they receive wide circulation among their friends.

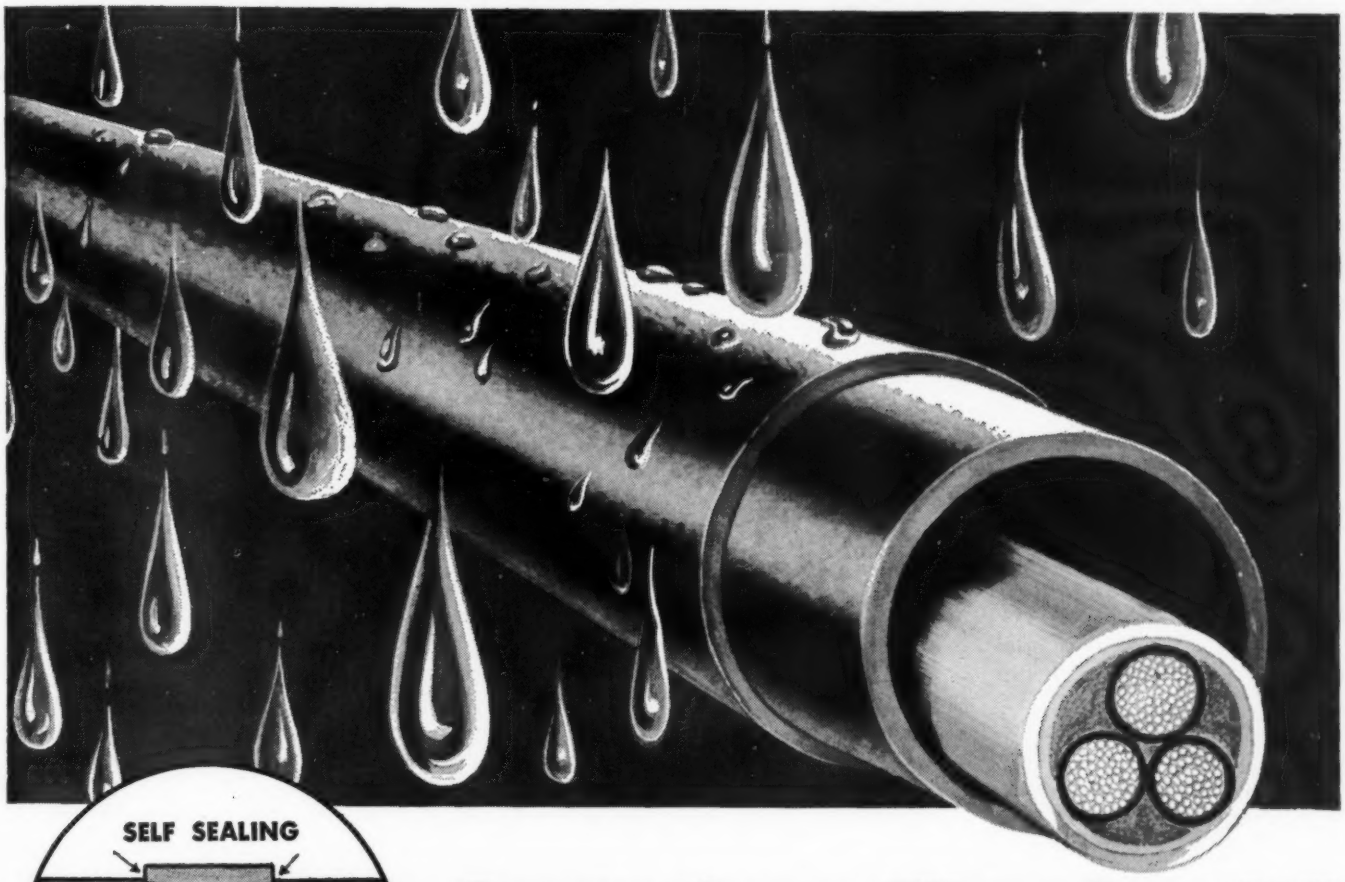
"TELEPHONY magazine is well known to the cable splicing craft in the Inglewood, Cal. area of The Pacific Telephone & Telegraph Co. because of my habit of usually having a copy in my car—for lunch-time reading.

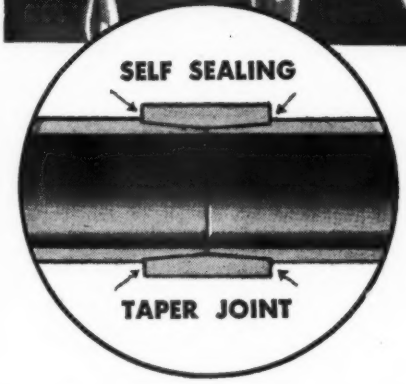
"Many thanks to yourself and all at 608 South Dearborn St. for giving us such a readable and informative trade journal."

•

It is reported that our scientific and professional occupations now employ more than 5 million persons as compared with just over 1.2 million in 1900, and the demand is still rising.

WATERTIGHT!





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TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett

Nov. 16, 1957

Part 6 (Continued)

Level "1" First Selector

Level one, first selector is used for connection to special second selectors, serving information, repair service, test trunks, etc.

If there is no load figure available we can safely assume 4 per cent of the busy hour extension-to-extension traffic will be to these special codes.

Let us further assume the traffic load for extension-to-extension calls is 624 CCS.

624 CCS × .04 = 25 CCS.

In the accompanying "Trunk Capacity Table" (subtable 10—1 in 100), the closest figure to 25 CCS is 29.6 which calls for four trunks which means, 157 first selectors will be multiplied on four trunks to the special second selectors.

As one special second selector is associated with each trunk, four special second selectors would be provided.

Levels "2" and "3" (Second Selectors)

For the purpose of this problem we shall assume that only levels 2 and 3 of the regular second selectors are in use for extension service.

Since these two levels deliver the total CCS to the regular second selectors on an extension-to-extension basis, we shall suppose that the traffic over the second selector trunks will be even. Now, let us assume the initial capacity to be 900 lines in the 2,000 group and 500 lines in the 3,000 group, a total of 1,400 lines.

The total load into the second selectors is 526 CCS. 526 CCS ÷ 1,400 lines = .376 CCS per line.

900 lines (level 2) × .376 CCS = 338 CCS which will be delivered to the 2,000 group by the 157 first selectors.

338 CCS ÷ 157 first selectors = 2.15 CCS per selector.

Referring to the accompanying "Selector Multiple Table—10 Teminal Access—1 in 50" (120 sub-group column), we find 2.15 CCS per selector calls for 14 trunks, leaving 37 selectors not provided for.

37 first selectors × 2.15 CCS = 80 CCS. Add this value to the group total for the 14 trunks:

258 CCS + 80 CCS = 338 CCS.

The closest total figure in the 120 sub-group column to 338 is 342 which calls for 18 trunks.

(Please turn to page 30)

Selector Multiple Table—10 Terminal Access—1 in 50

TRUNKS	SELECTORS PER SUBGROUP																TRUNKS
	320		240		160		120		80		60		40		20		
	CCS CAPACITY PER																
	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	
10	.52	166	.70	168	1.06	170	1.42	170	2.18	174	2.93	176	4.55	182	10.10	202	10
11	.58	186	.79	190	1.20	192	1.60	192	2.45	196	3.30	198	5.15	206	11.50	230	11
12	.65	208	.88	212	1.34	214	1.78	214	2.73	218	3.70	222	5.80	232	12.90	258	12
13	.72	230	.97	232	1.48	236	1.97	236	3.03	242	4.10	246	6.40	256	14.40	288	13
14	.78	250	1.05	254	1.60	256	2.15	258	3.30	264	4.50	270	7.05	282	15.80	316	14
15	.84	270	1.13	272	1.73	276	2.32	278	3.58	286	4.87	292	7.65	306	17.20	344	15
16	.91	290	1.23	294	1.85	296	2.50	300	3.83	306	5.23	314	8.30	332	18.50	370	16
17	.97	310	1.31	314	1.98	316	2.67	320	4.10	328	5.63	338	8.90	356	19.70	394	17
18	1.03	330	1.39	334	2.10	336	2.85	342	4.38	350	6.04	362	9.55	382	20.80	416	18
19	1.09	350	1.48	354	2.23	356	3.03	364	4.65	372	6.44	386	10.25	410	21.80	436	19
20	1.16	370	1.56	376	2.36	378	3.22	386	4.93	394	6.67	410	10.95	438	-	-	20
21	1.22	390	1.64	392	2.49	398	3.38	406	5.23	418	7.20	432	11.65	466	-	-	21
23	1.34	430	1.81	434	2.74	438	3.75	450	5.80	464	8.04	482	13.00	520	-	-	23
25	1.47	470	1.97	472	3.00	480	4.08	490	6.38	510	8.84	530	14.38	575	-	-	25
27	1.59	510	2.13	510	3.25	520	4.46	535	6.94	555	9.75	585	-	-	-	-	27
29	1.72	550	2.31	555	3.50	560	4.83	580	7.50	600	10.67	640	-	-	-	-	29
31	1.84	590	2.48	595	3.78	605	5.21	625	8.13	650	11.50	690	-	-	-	-	31
33	1.97	630	2.67	640	4.03	645	5.58	670	8.75	700	12.42	745	-	-	-	-	33
35	2.09	670	2.83	680	4.31	690	5.96	715	9.44	755	13.34	800	-	-	-	-	35
37	2.22	710	3.00	719	4.59	735	6.29	755	10.13	810	-	-	-	-	-	-	37
39	2.34	750	3.17	760	4.88	780	6.67	800	10.81	865	-	-	-	-	-	-	39
41	2.47	790	3.33	800	5.16	825	7.08	850	11.50	920	-	-	-	-	-	-	41
43	2.59	830	3.50	835	5.44	870	7.46	895	12.13	970	-	-	-	-	-	-	43
45	2.72	870	3.67	880	5.72	915	7.88	945	12.75	1020	-	-	-	-	-	-	45
	320		240		160		120		80		60		40		20		

NON-GRADED GROUPS

TRUNKS	1	2	3	4	5	6	7	8	9
CCS CAPACITY	0.7	7.9	20	37	56	76	97	119	142

Hundred Call Seconds and Per Cent Use at Various Service Levels for Group Sizes of 1 to 50

The table number indicates the number of calls per 1000 encountering all equipment in the group busy

Trunks	TABLE 1		TABLE 5		TABLE 10		TABLE 20		TABLE 30		TABLE 40		Trunks
	CCS	% Usage	CCS	% Usage	CCS	% Usage	CCS	% Usage	CCS	% Usage	CCS	% Usage	
1	.1	.1	.2	.5	.4	1.0	.7	2.0	1.1	3.1	1.5	4.2	1
2	1.6	2.3	3.7	4.8	5.4	7.5	7.9	10.9	9.7	13.5	11.3	15.7	2
3	6.9	6.4	12.2	11.3	15.7	14.5	20.4	18.9	24.0	22.2	26.9	24.9	3
4	15.4	10.7	24.2	16.8	29.6	20.6	36.7	25.5	41.6	28.9	45.7	31.8	4
5	26.6	14.8	38.9	21.6	46.1	25.6	55.8	31.0	61.6	34.2	66.6	37.0	5
6	40.0	18.5	55.4	25.7	64.4	29.8	76.0	35.2	82.8	38.3	89.3	41.3	6
7	54.7	21.7	73.4	29.1	83.9	33.3	96.8	38.4	105	41.7	112	44.4	7
8	70.9	24.6	92.5	32.1	105	36.5	119	41.3	129	44.8	137	47.6	8
9	88.2	27.2	113	34.9	126	38.9	142	43.8	153	47.2	162	50.0	9
10	107	29.7	134	37.2	149	41.4	166	46.1	178	49.4	188	52.2	10
11	126	31.8	156	39.4	172	43.4	191	48.2	204	51.5	214	54.0	11
12	145	33.6	178	41.2	195	45.1	216	50.0	230	53.3	240	55.6	12
13	166	35.5	201	42.9	220	47.0	241	51.5	256	54.7	267	57.1	13
14	187	37.1	224	44.4	244	48.4	267	53.0	283	56.1	295	58.5	14
15	208	38.5	248	45.9	269	49.8	293	54.3	310	57.4	322	59.6	15
16	231	40.0	273	47.4	294	51.1	320	55.6	337	58.5	350	60.8	16
17	253	41.3	297	48.5	320	52.3	347	56.7	365	59.6	378	61.8	17
18	276	42.6	322	49.7	346	53.4	374	57.7	392	60.5	407	62.8	18
19	299	43.7	347	50.7	373	54.5	401	58.6	420	61.4	436	63.8	19
20	323	44.9	373	51.8	399	55.4	429	59.6	449	62.4	465	64.6	20
21	346	45.8	399	52.8	426	56.4	458	60.6	478	63.2	494	65.3	21
22	370	46.7	424	53.5	453	57.2	486	61.4	507	64.0	523	66.0	22
23	395	47.7	451	54.5	480	58.0	514	62.1	536	64.7	552	66.7	23
24	419	48.5	477	55.2	507	58.7	542	62.8	564	65.3	582	67.4	24
25	444	49.3	504	56.0	535	59.4	571	63.4	593	65.9	611	67.9	25
26	469	50.1	531	56.7	562	60.1	599	64.0	623	66.6	641	68.5	26
27	495	50.9	558	57.4	590	60.7	627	64.5	652	67.1	671	68.9	27
28	520	51.6	585	58.0	618	61.3	656	65.1	682	67.7	701	69.6	28
29	545	52.2	612	58.6	647	62.0	685	65.6	711	68.1	731	70.0	29
30	571	52.9	640	59.3	675	62.5	715	66.2	741	68.6	762	70.6	30
31	597	53.5	667	59.8	703	63.0	744	66.7	771	69.1	792	71.0	31
32	624	54.2	695	60.3	732	63.6	773	67.1	801	69.5	822	71.4	32
33	650	54.7	723	60.8	760	64.0	803	67.6	831	69.9	852	71.7	33
34	676	55.2	751	61.4	789	64.5	872	68.0	861	70.3	883	72.1	34
35	703	55.8	779	61.8	818	64.9	862	68.4	891	70.7	913	72.5	35
36	729	56.3	807	62.3	847	65.4	892	68.8	922	71.1	944	72.8	36
37	756	56.8	836	62.8	878	65.8	922	69.2	952	71.5	975	73.2	37
38	783	57.3	864	63.2	905	66.2	952	69.6	982	71.8	1006	73.5	38
39	810	57.7	892	63.5	935	66.6	982	69.9	1013	72.1	1037	73.9	39
40	837	58.1	921	64.0	964	66.9	1012	70.3	1043	72.4	1069	74.2	40
41	865	58.6	950	64.4	993	67.3	1042	70.6	1074	72.8	1099	74.4	41
42	892	59.0	979	64.7	1023	67.7	1072	70.9	1104	73.0	1130	74.7	42
43	919	59.4	1008	65.1	1052	68.0	1103	71.3	1135	73.3	1161	75.0	43
44	947	59.8	1036	65.4	1082	68.3	1133	71.5	1166	73.6	1192	75.3	44
45	975	60.2	1066	65.8	1112	68.6	1164	71.8	1197	73.9	1223	75.5	45
46	1003	60.6	1095	66.1	1142	69.0	1194	72.1	1228	74.2	1255	75.8	46
47	1030	60.9	1124	66.4	1171	69.2	1225	72.4	1259	74.4	1286	76.0	47
48	1058	61.2	1153	66.7	1201	69.5	1255	72.6	1291	74.7	1317	76.2	48
49	1086	61.6	1183	67.1	1231	69.8	1286	72.9	1322	74.9	1349	76.5	49
50	1115	61.9	1212	67.3	1261	70.1	1317	73.2	1353	75.2	1381	76.7	50

Trunk Capacity Table

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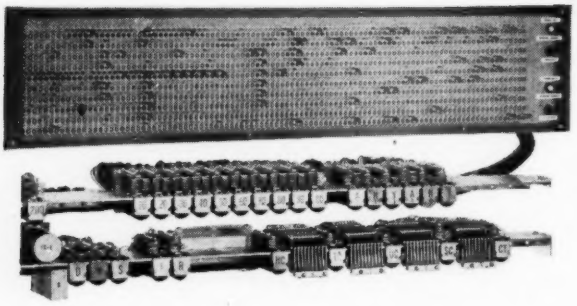

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Advanced technique of printed circuity is used in this equipment. The Magnetic Impulse Counter is the basic unit of the computer register circuits, supported by standard telephone relay apparatus of recognized manufacture.

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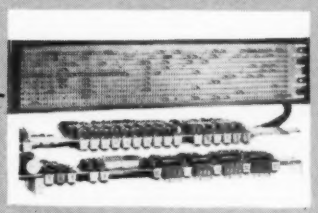

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CHECK THESE ADDITIONAL BENEFITS OF UNIVERSAL COMPUTER INTERCEPT

- ✓ Increase Schedule A Commissions.
  Your TPL will have the effective features of TPS intercept *to add to* your toll settlement.
- ✓ Increased Revenue through Increased Trunk Usage Time.
  Reduce the repeated attempts on long-haul toll calls that keep valuable toll switching apparatus tied up.
- ✓ Savings in Time and Material in Adding Intercept Service to your Operation.
- ✓ Intangible Advantages.
  - Immediate intercept of calls to busy lines for non-working or changed numbers on these lines.
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TELEPHONY'S Traffic Engineering Handbook

Concluded from page 26

And, so, level 2 requires that 157 first selectors shall multiple on 14 plus 4 trunks to the second level (2,000) connectors.

Level 3 trunks are engineered in the same manner used for level 2.

500 lines × .376 CCS = 188 CCS

188 CCS ÷ 157 first selectors = 1.20 CCS per selector.

Again referring to the "Selector Multiple Table—10 Terminal Access—1 in 50" (120 sub-group column), we find the closest figure to 1.20 is 1.42 which calls for 10 trunks, leaving 37 first selectors not provided for.

37 first selectors × 1.20 CCS = 44 CCS.

Add this value to the group total for 10 trunks:

170 CCS + 44 CCS = 214 CCS.

The closest figure to 214 CCS in the 120 sub-group column is 214 CCS which calls for 12 trunks.

Therefore, level 3 will require that the 157 first selectors shall multiple on 10 plus 2 trunks to the third level (3,000) connectors.

PBX Tie Trunks

Several types of tie trunks are available to provide intercommunication between two PBX switchboards.

Two-Way Manual: These tie trunks terminate on trunk jacks at the switchboard. Incoming calls are completed to the station by the operator. Calls from stations to the tie trunks are routed to the operator trunks and completed at the switchboard. Either ringdown or automatic signalling may be provided.

Two-Way Manual—Dial Selected: These trunks are associated with terminals on selector levels, in addition to the jack termination on the switchboard, to permit the station users to reach the tie trunk directly by dialing a code. The tie trunks are equipped for automatic signalling in both directions. Except for very small tie line groups, it is recommended that busy lamps be provided with the tie line jacks to avoid sleeve testing at the switchboard.

Outgoing Manual, Manual and Dial Selected, Incoming Dial Transmitting: These trunks are associated with terminals on selector levels and jacks at the switchboard for outgoing calls and with incoming selectors or connectors for incoming calls. Automatic signalling is provided on outgoing calls. Incoming calls are completed mechanically under control of the dial at the distant exchange. Busy lamps are recommended. A call lamp per tie line trunk is required if incoming calls to denied levels are to be intercepted by arranging the incoming selector to restore to normal when denied level is dialed.

Outgoing Dial Repeating, Manual and Dial Selected Incoming Dial Transmitting: These tie trunks are associated with terminals in selector levels and with switchboard jacks for outgoing calls and with incoming first selectors or incoming connectors for incoming calls. Provision of busy lamps and call lamps is on the same basis as described above.

A separate dialing jack is required for each tie trunk to permit the operator to dial over the trunk. The dial repeating feature extends the dialing range of local stations to permit direct dial control of switches at the distant satellite. An incoming first selector or connector is required at the distant satellite.

If the dial switching equipment is not designed to operate with the fast dials normally provided at switchboard positions, slow operating dials must be provided at any position at which the operator will complete calls over dial repeating trunks of this type.

TRUNKS	SELECTORS PER SUBGROUP																TRUNKS
	320		240		160		120		80		60		40		20		
	CCS CAPACITY PER																
	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	SEL	GRP	
10	.47	149	.63	150	.95	152	1.28	154	1.95	156	2.63	158	4.10	164	9.10	182	10
11	.52	168	.71	170	1.08	172	1.45	174	2.20	176	3.00	180	4.65	186	10.50	210	11
12	.59	188	.79	190	1.20	192	1.62	194	2.47	198	3.37	202	5.25	210	11.90	238	12
13	.65	208	.87	210	1.33	212	1.78	214	2.73	218	3.73	224	5.85	234	13.20	264	13
14	.71	228	.96	230	1.45	232	1.95	234	2.98	238	4.10	246	6.45	258	14.50	290	14
15	.77	246	1.03	248	1.56	250	2.12	254	3.23	258	4.33	266	7.00	280	15.80	316	15
16	.82	264	1.11	266	1.68	268	2.27	272	3.48	278	4.77	286	7.60	304	17.10	342	16
17	.88	282	1.18	284	1.80	288	2.43	292	3.75	298	5.13	308	8.20	328	18.20	364	17
18	.94	300	1.26	304	1.91	306	2.60	312	3.98	318	5.50	330	8.80	352	19.20	384	18
19	.99	318	1.34	322	2.03	324	2.77	332	4.25	340	5.90	354	9.45	378	20.20	404	19
20	1.05	336	1.43	342	2.15	344	2.93	352	4.50	360	6.27	376	10.10	404	-	-	20
21	1.11	354	1.50	360	2.27	364	3.08	370	4.77	382	6.63	398	10.75	430	-	-	21
23	1.22	390	1.65	396	2.51	402	3.42	410	5.32	426	7.40	444	12.20	488	-	-	23
25	1.33	426	1.80	432	2.74	438	3.75	450	5.88	470	8.17	490	13.25	530	-	-	25
27	1.44	462	1.95	468	2.96	474	4.08	490	6.44	515	9.00	540	-	-	-	-	27
29	1.56	498	2.10	505	3.19	510	4.42	530	7.00	560	9.92	595	-	-	-	-	29
31	1.67	535	2.27	545	3.44	550	4.75	570	7.56	605	10.75	645	-	-	-	-	31
33	1.78	570	2.44	585	3.69	590	5.13	615	8.12	650	11.58	695	-	-	-	-	33
35	1.89	605	2.58	620	3.94	630	5.46	655	8.69	695	12.42	745	-	-	-	-	35
37	2.02	645	2.73	655	4.22	675	5.79	695	9.31	745	-	-	-	-	-	-	37
39	2.14	685	2.90	695	4.47	715	6.17	740	10.00	800	-	-	-	-	-	-	39
41	2.25	720	3.04	730	4.72	755	6.54	785	10.65	850	-	-	-	-	-	-	41
43	2.36	755	3.19	765	4.97	795	6.87	825	11.25	900	-	-	-	-	-	-	43
45	2.48	795	3.35	805	5.25	840	7.25	870	11.87	950	-	-	-	-	-	-	45
	320		240		160		120		80		60		40		20		

NON-GRADED GROUPS

TRUNKS	1	2	3	4	5	6	7	8	9
CCS CAPACITY	.4	5.4	16	30	46	64	84	105	126

Selector Multiple Table—10 Terminal Access—1 in 100

To Figure Tie Trunk Requirements

Assume 94 CCS will be delivered to these trunks.

The accompanying "Selector Multiple Table—10 Terminal Access—1 in 100" shows there is no figure this low in any of the sub-group columns, so we must refer to the "non-graded Groups" scale where we find the closest figure to 94 CCS is 105 CCS which calls for 8 trunks.

And, so, the 157 first selectors would be multipled on 8 trunks to the tie trunk locations.

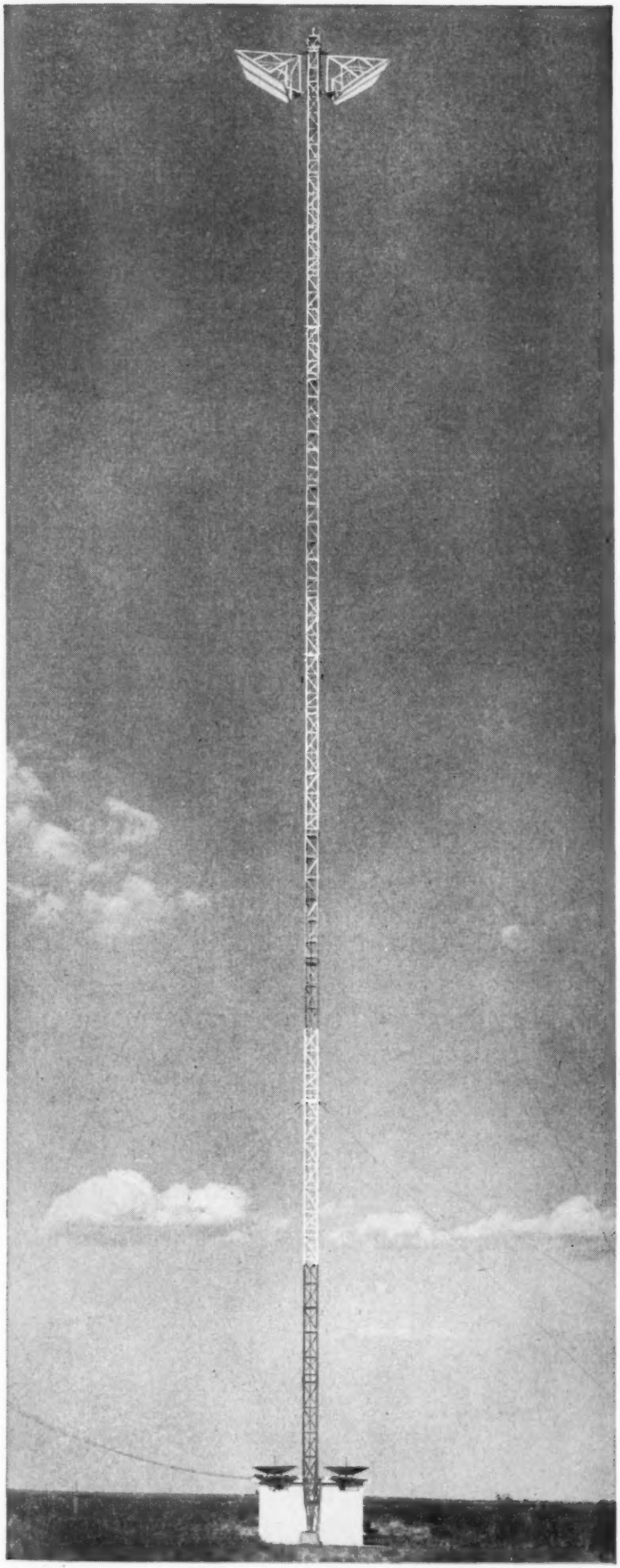
These same figures could be arrived at by referring the total CCS from the tie trunk group (if the requirements are for less than 10 trunks) to the accompanying "Trunk Capacity Table."

Regulation May Lose Touch

"Some overlook that intangibles, such as regulatory techniques and ideas . . . lose touch with current events, and should be scrapped or revised in keeping with changing needs and conditions. The freezing of old decrees can prove a handicap to the effort of alert businessmen to provide optimum wages to employes while giving better values to customers." — M. S. RUKEYSER, *columnist.*

Spiritual Ingredient

"Emotion is the atmosphere in which thought is steeped, that which lends to thought its tone or temperature, that to which thought is often indebted for half its power."—HUGH R. HAWEIS.



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your specific needs

for television microwave are met by the most complete and most widely used portable and rack-mounted equipment in the industry for color with audio transmission—*Raytheon KTR relays.**

KTR-100—0.1 watt for 6, 7, and 13 Kmc bands.

KTR-1000—standard 1.0 watt for 6 and 7 Kmc bands.

KTR-1000G—deluxe 1.0 watt for 6 and 7 Kmc bands.

Complete technical data on request.

Please write to *Raytheon Manufacturing Co., Commercial Equipment Division, Dept. 6120R, Waltham 54, Massachusetts*

RAYTHEON *Excellence in Electronics*

Mountain States Look Toward Safety, Long-Range Planning

By FRANCES E. CRETCHER

THE 200 TELEPHONE PEOPLE attending the 11th annual convention of the Rocky Mountain Telephone Association, Sept. 18 to 20, found the Salt Lake City program noteworthy for variety and interest. Beside speeches covering the broad general field, daily workshops gave Independent companies and the Mountain States Telephone & Telegraph Co. representatives a chance to consider day-to-day operating problems of common concern. How to improve the industry's already top-scoring safety record, and forecasts of trends and markets, significant in planning for the future, were among the discussions.

The Rocky Mountain States offer some special challenges to the telephone industry, said David Hamil, REA administrator, in a speech outlining telephone progress in that area.

There is no rougher terrain in the country, which means construction costs are high and maintenance difficult, and rural families are widely scattered in these states, he pointed out. This "seems to make service in some areas impractical at this time."

A survey last year showed that 61 per cent of all rural families now have telephones; however 30 per cent are common battery, 13 per cent are magneto, and a quarter of all farm telephones have nine or more parties on a line.

Outlining some important accomplishments of the United States Independent Telephone Association, which is celebrating its 60th anniversary, William C. Henry of Bellevue, O., director of the national Independent association, defined its area of responsibilities as five-fold—to deal with the legislative, executive and judicial branches of the federal government, to look after the Independents' relations and interests with the Bell System and other industries, and to promote national advertising and public relations programs.

Reviewing outstanding accomplishments of the past, Mr. Henry cited the USITA's role in obtaining the 1913 Kingsbury Commitment, by which Independent companies, upon expiration of the basic Bell patents, asserted their right to grow and develop. This prevented, in effect, the public ownership and operation of all telephone service in the United States, he pointed out.

The USITA obtained a provision in the Communications Act of 1934 exempting Independent companies from jurisdiction of the FCC unless they had lines extending across a state line, or, by stock ownership, were under control of a Bell company. This has saved the Independents tremendous costs in "time, money and headaches."

The association's most rewarding financial activity, Mr. Henry said, was the sponsorship of negotiations on toll

The board of directors of the Rocky Mountain Telephone Association. Seated, left to right: C. A. Blakeney of Carlsbad, N. M.; J. W. Baker of Coeur d'Alene, Idaho; Grid Rowles of McCall, Idaho; J. E. Tipton of Espanola, N. M.; F. L. Reyher of Haxtun, Colo.; Ward Blazzard of Kamas, Utah and Charles McLean of Kalispell, Mont. Standing, left to right: Rulon Callister of Delta, Utah; D. A. McLean of Denver, Colo.; Earle Crandall of Pinedale, Wyo.; Donald Dickson of Rupert, Idaho; E. P. Corbin of Monticello, Utah; J. W. Christian of Pioche, Nev.; C. W. Haas of Big Timber, Mont., and H. B. Norman of Gunnison Utah. C. M. Hart of Kingman, Ariz., and M. O. Trego of Sundance Wyo., were absent when picture was taken.

ESCO RINGING EQUIPMENT

MEMBER

ADDITIONAL ESCO FEATURES (details in future ads pictured on the dial) — further explain why Esco components are included in installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard and Supply Co., Leich Sales Corp., and Stromberg-Carlson Co.

UNIQUE INTERRUPTER DESIGN

. . . with the features that operating engineers want most!

You can expect more than ordinary performance from Esco interrupters for a number of exclusive design reasons. First, Esco interrupters are designed to allow more cams and circuits with a single set of driving gears. But these unique interrupters are also more accessible. Pile-up are mounted at an angle in relation to the base. This inovation gives wider clearance for easier, surer inspection of contacts, terminals and wiring.

For longer life and lower up-keep, Esco interrupters are equipped with nylon cams, followers and actuators. This material, with its excellent wearing qualities, has an outstanding record in these applications. Another point — cams are secured to the shaft with a set screw and a key. This extra feature assures permanent positioning and accurate timing.

Practical features like these are only some of the reasons why Esco Ringing Equipment is preferred by so many equipment engineers and suppliers. Full information is yours on request. Write for free booklet.

Write today for full information

ELECTRIC SPECIALTY CO.
176 South Street, Stamford, Connecticut

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Write today for full information

ELECTRIC SPECIALTY CO.
176 South Street, Stamford, Connecticut

compensation with the Bell System, increasing the revenues of Independent companies by many millions of dollars during the past 22 years.

The USITA is battling ("so far with astonishing success") the legislative movement to repeal the 750-station operator exemption; is seeing that Independents secure a fair share of compensation for toll business interchanged with Bell System companies; and it has represented the Independent viewpoint in the rewriting of the Separations

J. V. Bradley, of Cheyenne, Wyo., whose paper on "What We Can Do To Improve Our Safety Record" was read by H. H. Hembley, also of Cheyenne.

Manual of the NARUC. This could, in its various applications, affect the revenues of any telephone company, in its provision of basic procedures for separating properties, revenues and expenses in furnishing services in the various classifications. A task force composed of representatives from the NARUC, the FCC, the USITA and the Bell System held meetings for five months, to revise the present manual.

In its work of selling the industry to the public, the association mails, free of charge, to all companies asking them, mats of advertisements for local use tieing in with the USITA's national advertisements; and periodically it mails reprints, statistical data and other information of interest to a carefully selected list of 3,500 bankers, securities analysts, life insurance companies, investment houses and other financial-minded groups and individuals. It becomes increasingly evident that the USITA advertising campaign is paying off in more ways than one, Mr. Henry commented.

The USITA sponsored, this summer, the first of a series of telephone engineering management conferences at Michigan State University, he reported. Other spheres of positive USITA action include improvements in accounting procedures, seeking relief from unfair taxes, studies relating to Direct Distance Dialing (DDD), liaison with the military, and presentation of testimony to the FCC in supporting the allocation of sufficient radio frequencies to telephone companies.

The communications industry can well take pride in its industrial accident prevention record—the best in the nation. Its employes are safer on the job than off the job by a ratio of more than 30 to 1 as regards injuries requiring one day's absence or more; while the ratio of fatal accidents is 12 to one. These observations were made by Howard Hembrey of Cheyenne, Wyo., in reading a paper for J. V. Bradley, vice president of Mountain States Telephone & Telegraph Co., who was unable to be present.

In 1922 the Mountain States company first adopted a policy of standardization. A safer plant was assured by providing joint construction to eliminate power hazards, provision of proper tools and work equipment, and regular inspection for proper maintenance, Mr. Hembrey stated. A safety code was prepared, pointing out safe practices to follow, and this reduced the lost time accident rates from 73 per thousand employes in 1922, to 38 in 1925.

As further steps toward the safety goal, he said, the company introduced first aid training classes qualifying many employes as instructors and

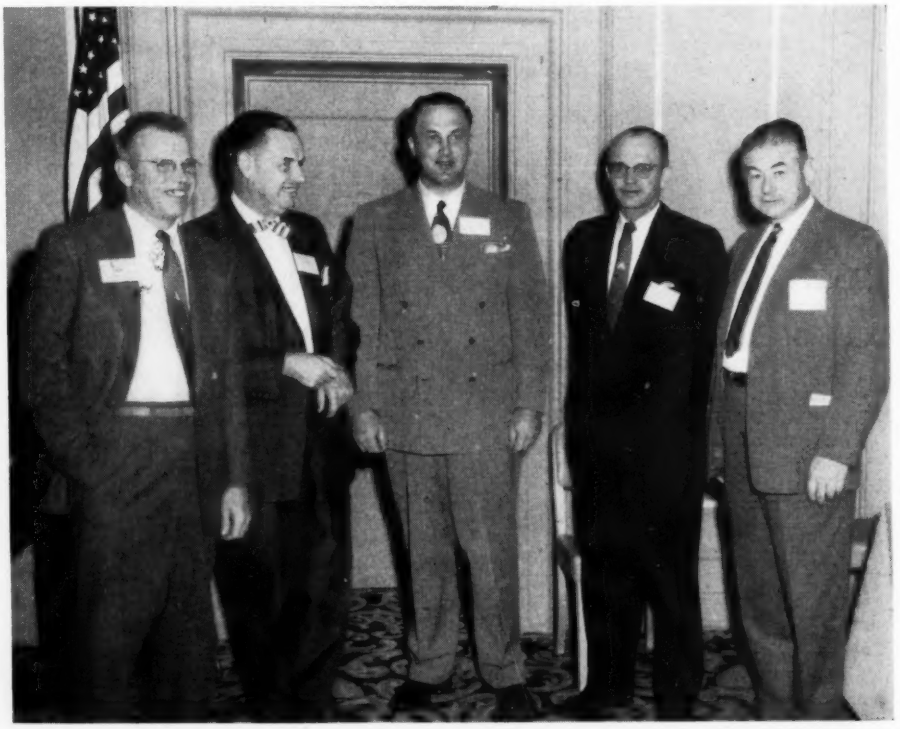
D. D. Phelps of Denver discusses "Is There a Larger Market for Telephone Service?"

nearly all outside people carry first aid cards. Competition among training teams made employes more safety conscious. There is a system-wide reporting procedure, and all accidents are analyzed by a safety committee to prevent recurrence. An organized training procedure for work operations assures adequate information, training and supervision in safety practices.

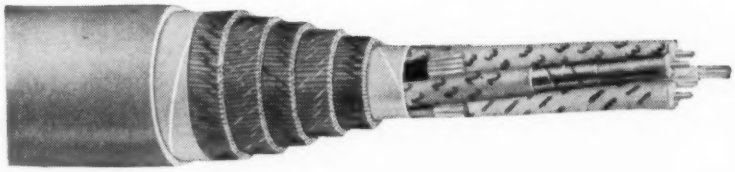
The safety creed, covers four main points:

1. The safety of employes shall never be endangered to meet the re-

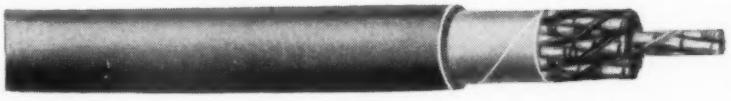
(Please turn to page 52)



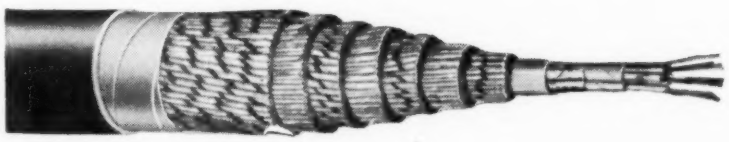
A "get-together" between sessions. Left to right: E. L. Striegel of Richfield, Idaho; C. L. Parker of Salt Lake City, Utah; Rulon Callister of Delta, Utah; D. A. Hamil, REA Administrator, and W. C. Henry of Bellevue, O.



Composite Co-axial and Audio Long Distance Telephone Cable



60 Channel 14 Pair Carrier Telephone Cable



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Christmas gif

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if promotion

el revenue producing extensions for you

The December issue of Ladies Home Journal will reach *five and one half million* families this week with a full color advertisement featuring Christmas gift subscriptions for Ericofons.

The response to the ads in the October issues of Ladies Home Journal and House & Garden points up the fact that thousands of telephone subscribers will respond to this "Christmas Gift" ad and request gift subscriptions for their families and friends.

These orders for gift subscriptions will obviously be almost 100% for extension installations!

These extension installations mean MORE PROFITABLE BUSINESS FOR YOU!

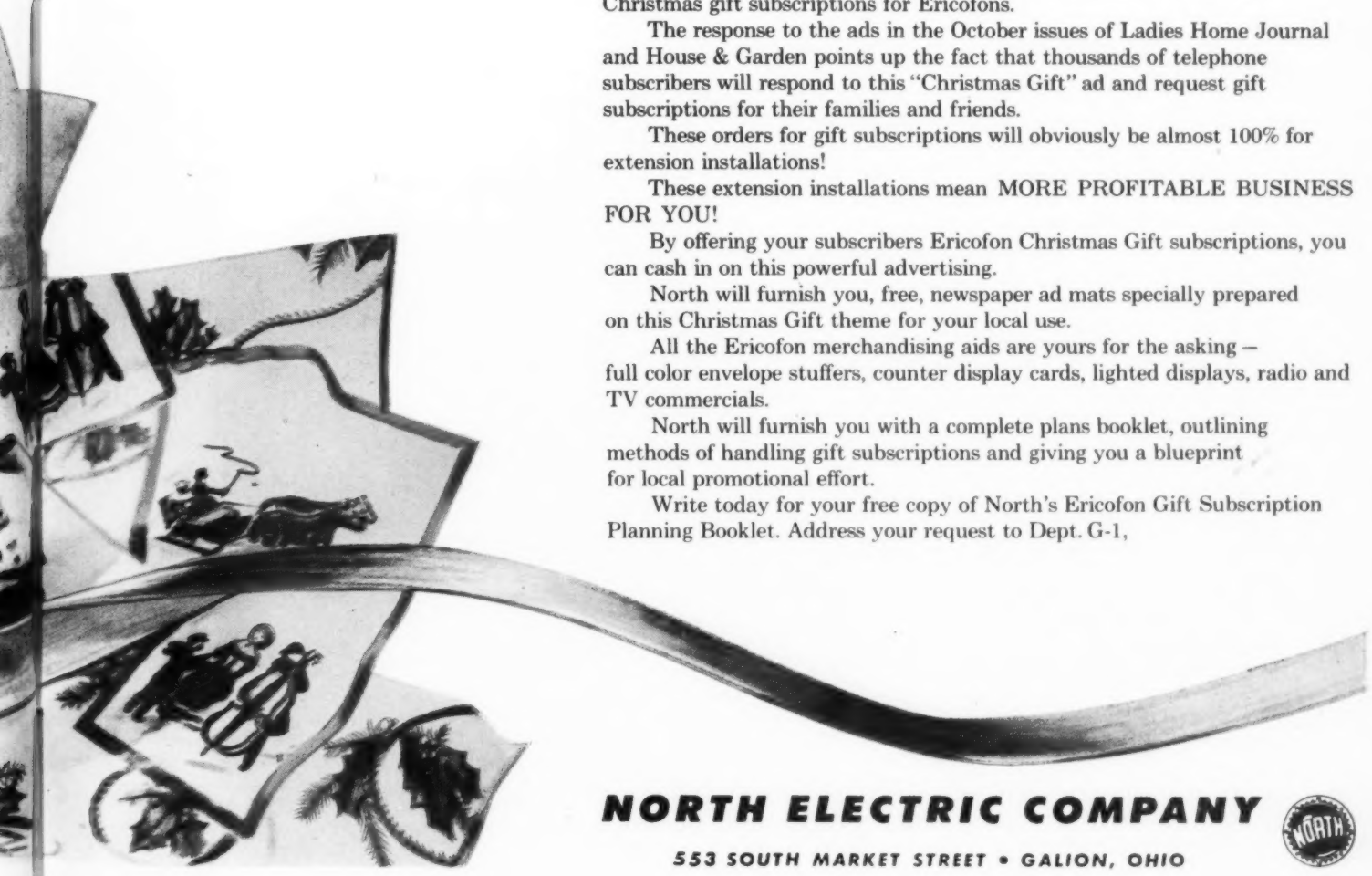
By offering your subscribers Ericofon Christmas Gift subscriptions, you can cash in on this powerful advertising.

North will furnish you, free, newspaper ad mats specially prepared on this Christmas Gift theme for your local use.

All the Ericofon merchandising aids are yours for the asking – full color envelope stuffers, counter display cards, lighted displays, radio and TV commercials.

North will furnish you with a complete plans booklet, outlining methods of handling gift subscriptions and giving you a blueprint for local promotional effort.

Write today for your free copy of North's Ericofon Gift Subscription Planning Booklet. Address your request to Dept. G-1,



NORTH ELECTRIC COMPANY

553 SOUTH MARKET STREET • GALION, OHIO

Telephone's Role in State Development Stressed in North Carolina

By Dan S. Fargo

As the North Carolina Independent Telephone Association met in Pinehurst on Oct. 3 and 4 for its 26th annual convention, methods to expand and add business and industry in the state were much in the minds of those attending; also present was realization of the essential part played by the state's telephone industry in such development.

The convention keynoter, Luther H. Hodges, governor of North Carolina, spoke on "Industrializing North Carolina." He commended Independent telephone companies for the part they've played in the development of the state, and stated they will continue to occupy a key position in the state's economy.

Governor Hodges pointed out that, in the nationwide competition to attract business, a state's communication system, like its transportation and its market situation, ranks high in the considerations of those responsible for locating new plants or enterprises.

Then the governor discussed other aspects of attracting businesses. He said it is becoming more and more necessary for local representatives to sell visiting groups; communities must be ready with local statistics on power, water and housing, as well as communications. He told of one group of visiting junior executives who passed up a cocktail party to see local schools firsthand.

Governor Hodges also mentioned that a credit corporation to finance North Carolina business had been formed in the state through sale of stock to the state's citizens and loans from state financing institutions.

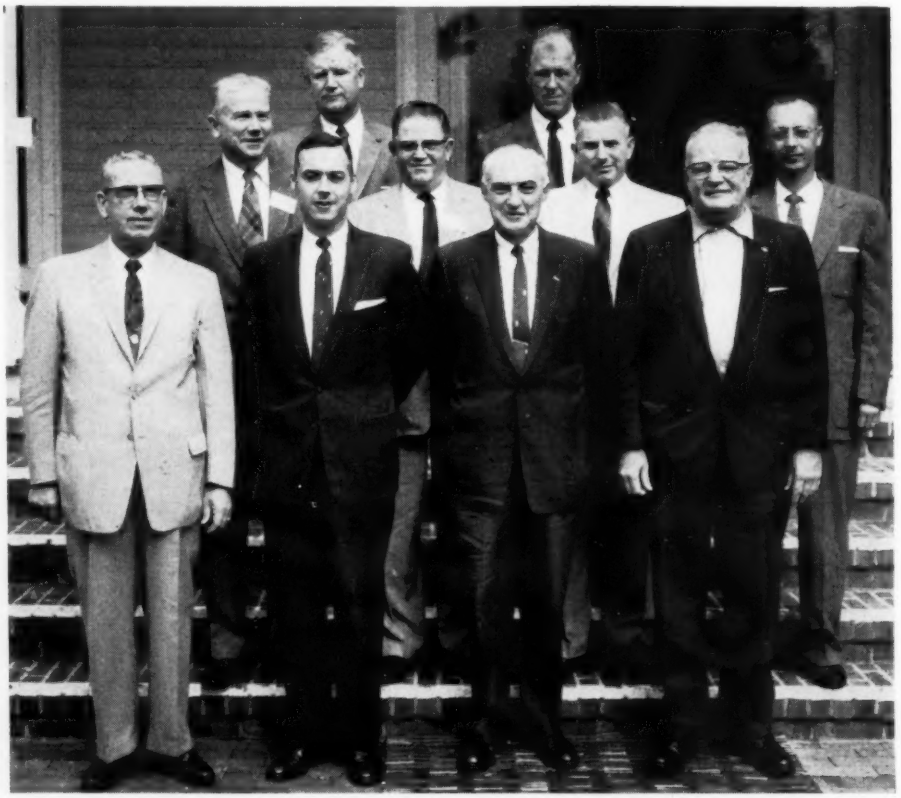
With this awakened attitude, the governor said, North Carolina is now in a competitive position to attract business and industrial prospects.

The report of Frank G. LaPrade, association president, of Martinsville, Va., recounted the achievements of association committees, among which were the action of the legislative committee on reimbursement for facility relocation along federal-aid highways; progress of the Civil Defense preparations committee; preparation of a pamphlet on the Independent telephone industry in North Carolina; representation by J. H. Wright of Durham in a traffic conference called by the governor, and the holding of Spring conferences on plant, commercial and traffic matters.

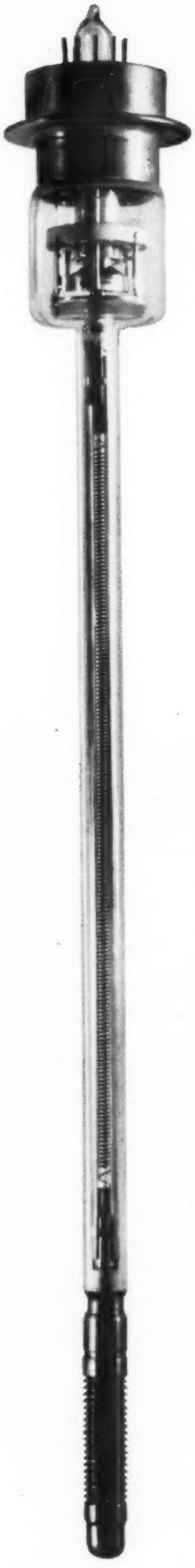
A careful analysis of "Tight Money and Public Utilities" was presented by Thomas H. O'Brien, assistant cashier, First National City Bank, New York.

Mr. O'Brien reviewed the Independent industry's need for loan funds resulting from continuing demands for expansion of telephone service, and he reminded his listeners that banks fulfill the function of short-term money lenders and thus allow telephone com-

(Please turn to page 46)



Directors and officers of the North Carolina Independent Telephone Association are front row, left to right: F. G. LaPrade, director and outgoing president; P. J. Long, vice president; L. D. Garibaldi, president, and John E. Cline, vice president. Second Row: L. S. Blades Jr., H. E. Hussey, Louis Runkle and W. C. Harris. Third Row: Robbins Tilden and T. H. Sawyer. Other directors and officers not included in picture are: R. E. McKelvey, vice president; J. H. Bell, secretary-treasurer; Mrs. J. D. Morris, L. D. Coltrane, H. Dail Holderness, J. F. Havens, E. O. Freeman, W. S. Beddingfield and J. H. Snider.



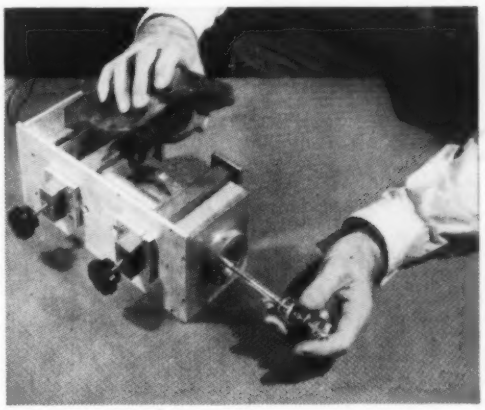
A GREAT AMPLIFIER TUBE IS PERFECTED FOR TELEPHONY

A new transcontinental microwave system capable of carrying four times as much information as any previous microwave system is under development at Bell Laboratories. A master key to this development is a new traveling-wave tube of large frequency bandwidth.

The traveling-wave amplifying principle was discovered in England by Dr. Rudolf Kompfner, who is now at Bell Laboratories; the fundamental theory was largely developed by Labs scientist Dr. John Pierce. Subsequently the tube has been utilized in various ways both here and abroad. At the Laboratories it has been perfected to meet the exacting performance standards of long distance telephony. And now for the first time a traveling-wave tube will go into large-scale production for use in our nation's telephone systems.

The new amplifier's tremendous bandwidth greatly simplifies the practical problem of operating and maintaining microwave communications. For example, in the proposed transcontinental system, as many as 16 different one-way radio channels will be used to transmit a capacity load of more than 11,000 conversations or 12 television programs and 2500 conversations. Formerly it would have been necessary to tune several amplifier tubes to match each channel. In contrast, a single traveling-wave tube can supply all the amplification needed for a channel. Tubes can be interchanged with only very minor adjustments.

The new amplifier is another example of how Bell Laboratories research creates new devices and new systems for telephony.



Left: A traveling-wave tube. *Right:* Tube being placed in position between the permanent magnets which focus the electron beam. The tube supplies uniform and distortionless amplification of FM signals over a 500 Mc band. It will be used to deliver an output of five watts.

BELL TELEPHONE LABORATORIES

WORLD CENTER OF COMMUNICATIONS RESEARCH AND DEVELOPMENT

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QUALITY DEPENDABILITY PERFORMANCE

EXCHANGE AREA CABLE

Aerial and Duct are R.E.A. listed. Both Aerial and Duct and Direct Burial Cable utilize polyethylene insulation, aluminum shield and high molecular weight polyethylene jacket for top electrical values. Available in #26, #24, #22, or #19 AWG in 6 through 404 pairs.

RURAL DISTRIBUTION WIRE— R.E.A. LISTED

Conductors insulated with high molecular weight polyethylene and jacketed with color coded, weather resistant vinyl provide good transmission values at low cost. Available in either #19 or #22 AWG with 3, 6, 11, or 16 pairs cabled over a high molecular weight polyethylene insulated high strength galvanized support wire.

URBAN DISTRIBUTION WIRE

The rugged weather resistant vinyl insulation over the conductors is fully color coded. This construction, designed for block distribution, serves best where low cost rather than low attenuation is the prime consideration. Available in #24 AWG with 6, 11, or 16 pairs.

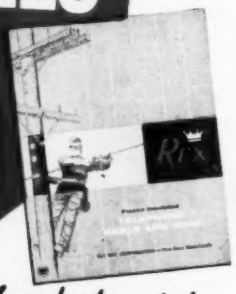
ONE PAIR DISTRIBUTION WIRE

A high molecular weight, weather resistant polyethylene extrusion encompasses the parallel conductors. A raised ridge tracer provides polarity identification. The high strength conductors make possible long spans on lateral branches or drop runs. Available in #14 or #12 Copperweld or .083 galvanized steel.

INSIDE WIRING CABLE

Solid, soft drawn bare copper conductors fully color coded with heat resistant polyvinylchloride insulation. All pairs twisted with varying lays to minimize cross talk and cabled to insure maximum flexibility. A tough, water resistant vinyl jacket in either brown or ivory provides good conductor protection for exposed insulation. Rip cord construction prevents damage to conductors in stripping. Available in #24 AWG with 6, 12, 16, 21, 26, 51 or 76 pairs.

REX WIRES & CABLES FOR THE TELEPHONE INDUSTRY



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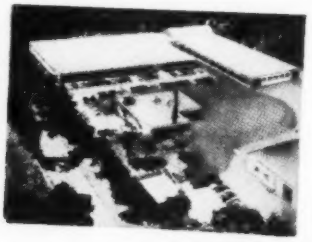

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STROWGER AUTOMATIC...

From Maine to California...from small unattended exchanges to large multi-office networks, telephone men have learned that Strowger Automatic is the best equipment for their exchanges. The wisdom of their decision lies in five basic reasons. Check these advantages. See why you, too, can profit with Strowger Automatic.

1. Simplicity of design insures minimum maintenance. Strowger Automatic equipment operates on a step-by-step principle and is designed with the simplest possible construction. This keeps adjustments and repairs to a minimum. The position of the switching components permits visual tracing of circuit operation. This speeds your initial training of personnel and makes trouble-shooting quick and easy.

2. Backed by 65 years of engineering know-how. Strowger Automatic is the only switching equipment in the world which is backed by 65 years of systems engineering, documented experience and continuous performance in all types of telephone exchanges. Your A.E. representative refers to this vast store-house of knowledge when analyzing your problems.

3. Quality construction gives you dependable service. You must see a Strowger installation to appreciate the craftsmanship of this precision-engineered equipment. Each part is made of the finest quality materials and assembled by skilled workers for long wear and dependable service.

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5. Meets the challenge of progress. For 65 years Strowger Automatic has proven its flexibility by meeting every new requirement of changing conditions without obsolescence.

Prove it for yourself! Visit a Strowger Automatic exchange. See the simplicity and flexibility of design...See the craftsmanship and quality of construction. Then get in touch with us. We'll be glad to help you in any way possible. Write *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.*

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CUT HANDSET LOSSES . . . on Coin Collector Telephones

These new short KOILED KORDS retractile cords allow sufficient length for use in telephone booths but are short enough to prevent the handset from hitting the floor if dropped.

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THE NEW "ALL IN ONE" CABLE COAT ELIMINATES THE NEED FOR:

Taped Splices: flexible neoprene coat covers the splice area completely, can be opened and reached without damage, at any time.

Potting: terminal blocks are filled with plastic resin and furnished with stud jumper wires for making cable conductor taps which eliminates the need for cutting and splicing the cable when taking off subscriber pairs. Connections are made by tapping onto the specified skinned conductors.

Optional Protection: by using protected terminal blocks, Minigap selective pair protection is provided adjacent to the conductor stud, thereby eliminating the need to jumper to a pole mounted protector.

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panies to secure long-term money more advantageously.

He detailed the information required by a bank for analysis of a loan application, and then cited many of the factors the lender must consider when reviewing this information. Mr. O'Brien stated:

"One of the most important factors . . . is, of course, the caliber of management.

"A second important factor . . . is a thorough investigation of the purposes for which the advances are being made. (This is) to determine whether the funds being advanced by the bank can be used economically and a suitable return earned upon the investment.

"A third requirement that each company must meet is the maintenance of satisfactory books and records to assure that the financial statements received by the bank are valid.

"The fourth, and one of the more important items that receive very close scrutiny by the lender, is the present and prospective earnings.

"A fifth factor which affects a company's request for a loan is the maintenance of compensating balances with the lender.

In summary, Mr. O'Brien gave the following suggestions for avoiding pitfalls occasionally encountered in borrowing:

(1) Don't ignore your local banker. As you undoubtedly have an account at your local bank, it is only logical that you should consult him before embarking on a financial program.

(2) Don't start a large-scale construction program without an adequate financial plan.

(3) Don't use all the bank credit available to you. Keep some in reserve for unforeseen contingencies.

(4) Don't play the money market. If the security markets are orderly, don't be afraid to pay the going rate. The indenture convenants accepted in long-term financing are more important than the rate of interest paid.

(5) Don't be surprised if the long-term lender insists on a five or 10-year non-call provision on your bonds.

(6) Don't allow your debt ratio to get out of line or your earnings to fall below adequate levels before taking corrective measures. Budgets and projections of your future financial condition can be prepared by your accountants and will help you avoid these pitfalls.

Lloyd Griffin, executive vide president of North Carolina Citizens Association, Inc., presented a talk on "North Carolina Taxes, Past and Future." Referring to maps and charts, Mr. Griffin showed that, predominantly, centers of high employment, and thus high aggregate wages, were in comparatively few counties, which clustered in areas served by the Southern Railroad and the Duke Power Co. He said that of course the heaviest concentrations of telephones will be found where the largest amounts of money and industry occur.

The new president of the North Carolina association, L. D. Garibaldi (left) of Matthews, and the outgoing president, Frank G. LaPrade (right) of Martinsville, Va., flank North Carolina Governor Luther H. Hodges. The governor keynoted the convention with his talk on "Industrializing North Carolina."

Mr. Griffin also urged, as had Governor Hodges, that all Independents be prepared to furnish both sufficient and excellent telephone service should a new business decide to locate in a territory served by an Independent.

Serious consideration should be given the possibility of starting more home-owned small industries, Mr. Griffin stated.

He also thought the state's telephone industry would do well to concentrate on lowering unemployment costs; that is, the costs incurred when an employe resigns of his own accord and unless the employer takes steps to cut off unemployment compensation, the resigning person can draw this compensation for six months.

Donald C. Power, president of the United States Independent Telephone Association and president of General Telephone Corp., addressed the delegates on the subject: "Merchandising —Our Business." Mr. Power first took a look ahead and forecast that a great future awaits the Independent telephone industry. The important thing to keep in mind, he said, is that when this new business arrives, as it surely will, the individual companies must be ready for it.

Mr. Power cautioned that the picture is not entirely rosy, that there is the shadow of inflation moving across the nation's economy. For the immediate future it is only being realistic to assume that inflation is going to be with us, until we see some definite signs to the contrary, he said.

On the problem of rate relief and cost of money he commented:

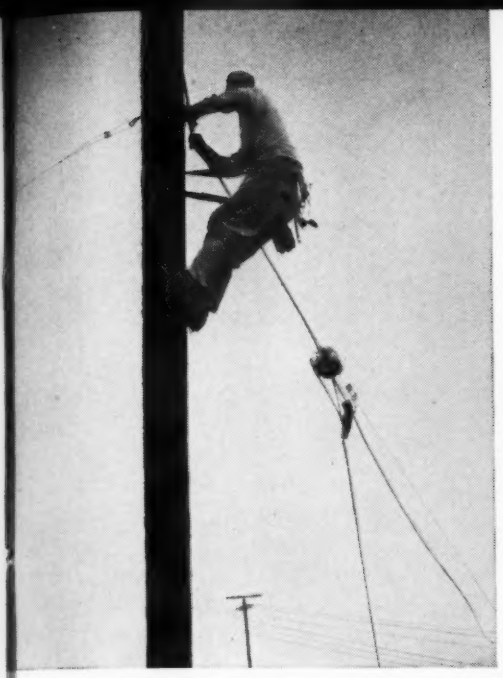
"Along side of inflation, of course, we have more recently been confronted with the problem of the increasing cost of money. Our companies must naturally expect to pay more for new capital.

"But, our industry's position on this would be a lot stronger if we could be more certain of cooperative regulatory action in rate cases. How are we going to pay 6 per cent or even more on bonds—and that may be necessary for some companies—and how are we going to sell junior securities, unless the investor is aware or has some assurance that our companies will be permitted to earn enough dollars to pay off?

"Some of our present regulatory thinking, which looks to the past instead of the future, and insists on regarding original cost dollar investment without regard to the loss of present-day dollar value, is getting more and more out of step with the times.

"The result of this kind of thinking, where it exists, is to put our telephone industry and other regulated public utilities in a financial strait jacket. It amounts to regarding the utility investor as a second-class citizen, financially. It has the effect of telling him that every other industry, every other

(Please turn to page 54)



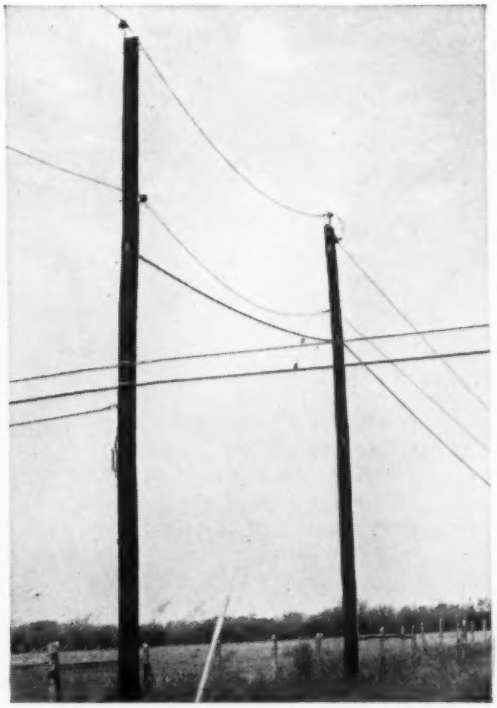
Aerial & Duct Cable. Tough polyethylene jacket defies abrasion, moisture, sunlight, weather. Cable is lightweight . . . easy to install and splice. Either regular or factory-assembled aerial cable available.

Self-supporting Cable. Same as Aerial & Duct Cable, except conductors are hard drawn, which enables this Anaconda Cable to be self-supporting. Cable eliminates messenger and hardware expense.

Direct-burial Cable. Double polyethylene jacket makes this cable ideal for direct burial. It's tough, resists moisture, soil chemicals, fungi. Copper shield and armor add rodent, lightning protection.

See the Man from Anaconda—for telephone cable

Rural and Urban Distribution Wire. Plastic jacket gives full protection during installation, service. No over-all jacket—pairs are color coded, readily accessible for taps, easy to splice.



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Splicing Kits. Complete kits containing all required splicing materials plus full instructions for splicing and grounding Anaconda Telephone Cables are available. Order with your cable.

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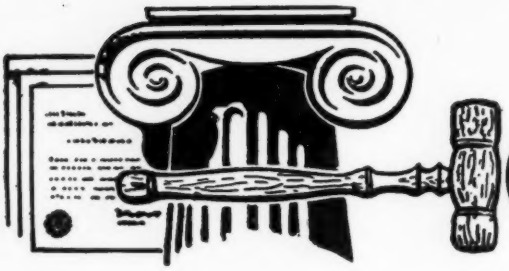


Courts and Commissions

Indiana Commission Hears Sale, Rate, Financing Pleas

The Indiana Public Service Commission has recently received the following petitions:

Napoleon-Millhousen Telephone Association, applicaton to sell its properties to Sunman Telephone Co., Inc.

Waterloo Telephone Exchange, Inc., petition to establish rates and issue bonds.

Midwest Telephone Co., Inc., Petersburg, plea to increase rates.

Southern Indiana Telephone Co., Inc., request to issue 10 shares of $10 par common stock for each one share of $100 par common outstanding; and to sell 6,000 shares of $10 par common.

The commission has approved the following:

A rate schedule for Gill Township Telephone Co., Merom, the company having also secured authority to borrow $61,000 from REA. Approved rates are:

	Business	*Residence*
One-party	$7.00	$5.00
Multi-party	6.00	4.00
Mileage, in ¼ mile units	70 cents per unit.	

Sale of the Sanford Telephone Co. to General Telephone Co. of Indiana, Inc.

An extended area service arrangement between General of Indiana's Mechanicsburg exchange and Indiana Bell Telephone Co.'s Middletown exchange.

Bell Wins Right-of-Way Decision in Missouri

It was reported on Nov. 2 that the Circuit Court of Pike County, Missouri, has entered a judgment in favor of the American Telephone & Telegraph Co. and the Southwestern Bell Telephone Co., who were defendants in a suit brought in September 1954 by C. Eugene Mosley and Clyde E. Mosley, both of St. Louis.

The suit alleged that the defendant telephone companies were trespassers on the Mosley land in Pike County, and asked the court to order the telephone companies to remove their telephone lines from the Mosley land.

The telephone companies filed counter-claims alleging that they had been granted rights-of-way and easements in the 1890's by the then four original owners of the land. They further alleged that they had been in possession ever since that time, and that the line of the companies occupied the right-of-way and easement, and had done so since 1898. They asked that the court so rule.

The defendant companies further alleged that the Mosleys had ordered the companies to keep their employes off the land and had threatened to shoot any such people who came upon the land for telephone business. The companies asked that the court enjoin the Mosleys from harming their employes and from interfering with the use of the right-of-way and easement by the companies and their employes.

The Court entered judgment in favor of the defendant telephone companies after holding a trial on Oct. 22. In its judgment, the court ruled that the telephone companies had a right-of-way and easement over the lands of the Mosleys and had had such since 1898. That the Mosleys had no right to interfere with the use of the right-of-way and easement by the telephone companies, nor to dispute or interfere with the use and title of the telephone companies in the right-of-way and easement.

The court further enjoined the Mosleys from disputing or interfering with the telephone companies in their possession and use of the right-of-way and easement, and also enjoined the Mosleys from doing, or threatening to do, bodily harm to the employes of the telephone companies in going to and from the right-of-way and easement and using it in the business of the telephone companies.

OKs Penalty Rates in Ga.

The Georgia Public Service Commission, having reviewed an earlier order it issued to the Farmers Telephone Co., Springfield, to improve service, recently decided that until such time as adequate and dependable telephone service is rendered by the Farmers company, the penalty rates prescribed by the commission in its order of July 25, 1957, shall remain in effect without revision.

Approve Sale of Kentucky Independent Property

According to a joint announcement of Garland B. Foscue Sr. of Wilmette, Ill., president of Consolidated Telephone Co., Florence, Ky., and Daniel B. Corman of Glasgow, Ky., the Consolidated company has sold all of its property situated in Estill County, Ky., to the Irvine-Ravenna Telephone Co., a new Kentucky corporation with its principal office at Irvine, Ky. The sale of the Irvine property recently was approved by the Kentucky Public Service Commission.

Mr. Corman is president and June Bertran of Louisville, Ky., is secretary-treasurer of the Irvine-Ravenna company, which presently serves 1,500 stations through the facilities of a common battery manual central office situated at Irvine. Mr. Corman has announced that a complete rebuilding modernization and expansion program is now in the planning stage which will involve expenditures of perhaps one million dollars and which will require three years to complete.

Harold Crawford who has been manager for Consolidated at Irvine for 18 years will remain in that capacity for the new company.

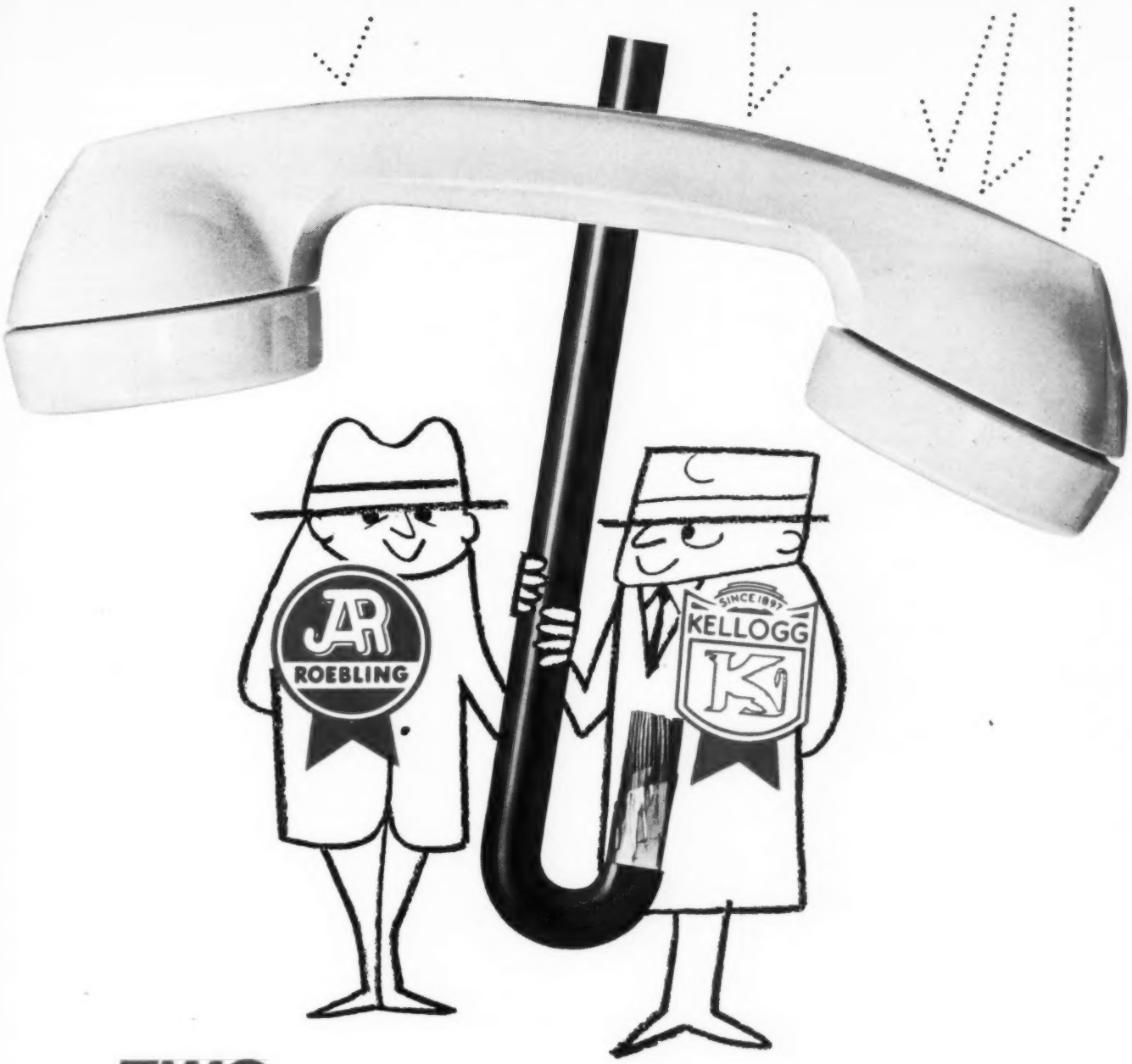
General of SW to Market $5,000,000 of Preferred

General Telephone Co. of the Southwest, San Angelo, Tex., has registered 250,000 shares of $20 par cumulative preferred stock with the Securities & Exchange Commission, it was reported on Nov. 5.

The company reported it plans to market the shares publicly at par without underwriting. Mitchum, Jones & Templeton, however, will help offer the shares on a "best efforts basis," the company said. Proceeds would be used to pay off bank loans incurred for construction.

Ask EAS Approval in Wis.

The Wisconsin Public Service Commission on Nov. 15 was to hear the application of the Mt. Vernon Tele-



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Why not find out about it? Get Roebling's free, new Plastic Telephone Cable Engineering Book, and other information, by writing to your nearest Kellogg Switchboard and Supply Company district office, or to the general sales office, 79 West Monroe Street, Chicago 3, Ill., or Electrical Wire Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling Lead-encased Telephone Cable—Available in conductor sizes 19, 22, 24 AWG ... 5 to 909 pairs. Paper-taped conductors, with 1% antimony lead sheath. Other coverings for special requirements.

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phone Co. for authority to convert its Mt. Vernon and Verona exchanges to automatic operation. Also to provide extended area service between its Verona exchange, and the Middletown exchange of the the Farmer's Union Telephone Co. at Cross Plains, and the Madison exchange of the Wisconsin Telephone Co.

Near Agreement in N. C. Co-op Territory Dispute

Members of the North Carolina Utilities Commission and representatives of rural telephone membership corporations sat down together at Raleigh on Nov. 7 to discuss their continuing differences over territorial rights and came up with a possible tentative agreement which could settle their long-standing controversy (TELEPHONY, Sept. 21, p. 37).

The co-ops proposed an agreement under which the commission would not order a commercial telephone company to serve people living in a co-op's territory until the co-op and the commercial company attempt to work out the problem with the customers involved; and when boundary disputes arise, the commission will hear the co-op side before it takes any action. Chairman Stanley Winborne indicated that the plan would be agreeable to the commission.

The commission, the state rural electrification authority, which administers the telephone co-ops; and telephone cooperatives named members of a committee which will seek to get the proposed agreement in writing.

The exact form of the compromise agreement seems uncertain since Commissioner Sam Worthington indicated that a proposal of the co-ops that the commission recognize present co-op boundaries would not be acceptable to him, unless it provided for the elimination of persons living in co-op territory who can't be served by the co-op.

Worthington said telephone companies had shown a willingness to serve people in co-op territory who have petitioned the commission for service by the companies; also that the co-op's argument that such situations would solve themselves — under a proposed procedure which calls for action by the commission in the event a co-op and a company can't reach an agreement—hadn't been the case in the past and had led to the commission orders which brought on the controversy.

It was pointed out that the commission now has about 20 petitions signed by between 300 and 350 people living in co-op service areas who want service from commercial companies, and that action on them is being withheld pending the outcome of the conference between the commission and the co-ops.

At the conference the commission defended its position in recently ordering a private company to serve people living within co-op areas on the grounds that agreement between co-ops and private companies do not bind the commission and that the co-ops could not or would not serve the petitioners.

The proposed agreement by the co-op spokesmen provided:

(1) That boundary lines between areas of commercial telephone companies and co-op territories, previously established through agreement by the companies and the co-ops, be recognized as binding by the commission.

(2) That the commission take whatever action it may deem proper for the public interest in determining formation and territories of new co-ops.

(3) After recognizing boundary lines between co-ops and commercial companies, the commission would permit direct negotiations between the companies, the co-ops and the telephone users in a given area to determine cases in which users desire changes in service from co-ops to the commercial company and vice versa.

Appointed on the committee which will seek to work out a written over-all agreement between the commission and the co-ops were: Worthington and Commissioners Harry Westcott and R. Lee Whitmire, representing the commission; and L. P. McLendon, Greensboro attorney; Gwyn Price, North Carolina REA chairman, and Dr. S. H. Hobbs, Jr., of Chapel Hill, representing the co-ops.

REA Approves Loan In New Mexico

The Rural Electrification Administration on Oct. 31 approved a loan of $162,000 to the Leaco Rural Telephone Cooperative, Lovington, N. M.

The loan will enable the borrower to extend initial telephone service to 92 new rural subscribers, including a Civil Aeronautics Administration air-ground peripheral facility near Caprock, N. M.

The present and a prior REA loan, totaling $472,000, will make it possible for the borrower to provide new and improved service for 729 rural subscribers. The borrower's completed system will include an automatic central office at Tatum. The system was cut over to automatic operation in May, 1956 and now serves approximately 450 subscribers.

P. H. Harris is president and R. B. Moore is manager of the Leaco co-op.

Minnesota Commission OKs Eight Sales, Rate Raise

Sale of eight telephone properties to the West Central Telephone Association, Wadena, and a rate increase for the Cherry Grove, Minn. exchange of the Lime Springs (Ia.) Telephone Co. were approved on Nov. 4 by the Minnesota Railroad & Warehouse Commission.

The Lime Springs company has been granted a loan allocation by the REA amounting to $196,000, of which $149,000 will be used to rehabilitate outside plant and convert the Cherry Grove exchange to automatic operation.

The Cherry Grove exchange serves 31 local and 222 rural stations. Extended area service is available between it and Lime Springs.

Approved dial service rates will produce net revenues of $15,007 and net income of $1,639, a 1.11 per cent return on the $146,996 rate base. Gross rates, effective upon conversion to automatic, are:

Business:	
One-party	$ 6.75
Two-party	6.00
Rural multi-party	5.50
Combined business and residence (same cable pair)	10.00
Residence:	
One-party	4.75
Four-party	3.75
Rural multi-party	4.00
Mileage charge (net) for service beyond the local base rate area, each 1/10th mile or fraction thereof:	
One-party	.30
Two-party, each subscriber	.20
Four-party, each subscriber	.15

Companies and properties (all in and near Sebeka) acquired by the West Central Telephone Association, and the number of stations involved, are:

Jordan Valley Telephone Co. (19).
Meadow Telephone Co. (20).
North Germany Telephone Co. (38).
Orton Creek Telephone Co. (45).
Red Eye Telephone Co. (Line No. 2—9 stations).
Sebeka Northeastern Short Line Telephone Co. (15).
Farmers Line No. 18 (5).
Line No. 25 Telephone Co. (6).

Illinois Companies Ask Raise In Rates, OK to Purchase

The Woodlawn Telephone Co. application to the Illinois Commerce Commission for approval of the purchase of Tri-County Telephone Co.'s Ina exchange was to have been heard on Nov. 14.

The Chandlerville Telephone Co. has asked the commission for a general rate increase amounting to a total of $5,500 a year for its 330 subscribers, it was reported on Nov. 4.

Nebraska Commission OKs Raises for Three Companies

The Nebraska Railway Commission on Oct. 25 authorized rate increases for the Johnstown Telephone Co. (TELEPHONY, Oct. 12, p. 50) effective Jan. 1, as follows:

	Old	*New*
One-party business	$2.00	$4.00
One-party residence	1.50	3.00
Four-party residence	1.25	2.25
Rural	1.25	2.25
Service station	.50	1.00

The prompt payment discount was discontinued. New rates will produce an estimated monthly increase in revenue of $106.50. The company serves 100 subscribers.

•

The Newport Telephone Co. will increase its rates effective Dec. 1. The Nebraska Commission authorized the following increases:

	Old	*New*
One-party business	$3.50	$4.75
One-party residence	2.25	3.50
Four-party residence	2.00	3.00
Rural	2.00	3.00
Service station	1.00	1.25

The company provides magneto service to 51 company customers and 95 switching subscribers. New rates will produce an estimated increase of $81.75 in revenue. Plans are under way to install new cable and rebuild the property.

•

The Staplehurst Telephone Co. was authorized on Oct. 22 by the commission to increase rates (TELEPHONY, Oct. 12, p. 50) as follows, effective Jan. 1.

	Old	*New*
One-party business	$2.35	$2.85
One-party residence	1.85	2.35
Rural	1.85	2.35

The company serves 248 subscribers over metallic lines. New rates will produce additional annual gross revenue of $1,488. After deducting operating expenses and taxes of $1,522.98, this will produce a rate of return of 2.40 per cent on a rate base of $10,947.71 based on net fixed investment plus materials, supplies and working capital.

Okla. Company Seeks Raise

Mooreland Farmers Telephone Co. has filed with the Oklahoma Corporation Commission a request for increased rates, it was reported on Oct. 20.

Mo. Company Asks Financing

The Ellington Telephone Co. on Nov. 4 asked the Missouri Public Service Commission for authority to issue its notes and indentures in the sum of $42,000 to Stromberg-Carlson Co., a division of General Dynamics Corp.

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N. E. Bell Rate Plea Denied By Vermont High Court

Vermont's supreme court on Nov. 5 unanimously denied a $253,000 annual rate raise for the New England Telephone & Telegraph Co. (TELEPHONY, Mar. 23, p. 61).

The main basis for its decision was what it held to be the company's failure to prove that the higher rate was necessary to give the company "a just and fair rate."

The high court's opinion upheld a Vermont Public Service Commission order dated Feb. 26, 1957, disapproving the rate raise as unjust and unreasonable. The company had filed the rate increase on Feb. 2, 1956, and put it into effect under refunding bonds on Aug. 29, 1956.

The method of refunding approximately $300,000 to Vermont telephone users was still unsettled at this writing as company officials considered the next move in the rate situation.

Company officials are studying the rate decision with a view toward renewing efforts to obtain rate relief.

Obituaries

RAY C. SMITH, 82, pioneer telephone man, died recently in Albion, Mich., after a short illness. Approximately 60 years ago, with his uncle, the late B. F. Woodbury, he established the Calhoun County Telephone Co. of Homer, Mich. They made several of their early telephones and also made the first switchboard for switching the calls. He was later instrumental in the company's purchase of the Tekonsha, Mich., exchange.

Mr. Smith was active as secretary-treasurer of the company until about two years ago when the Calhoun County Telephone Co. was sold to a company in Grand Rapids, Mich.

Surviving are his wife and two nephews.

•

FRANK F. RODERICK, 90, of Blue Springs, Neb., died on Oct. 17. A former president of the Nebraska Telephone Association, he was manager of the Lincoln Telephone & Telegraph Co. at Blue Springs and Wymore from 1929 until his retirement in 1934. From 1911 to 1929 he was secretary and manager of the Gage County Telephone Co. at Blue Springs.

Mr. Roderick was born in Brodhead, Wis., moved to Blue Springs in 1873 and was its oldest resident and former mayor. He was a charter member of the Frank H. Woods Chapter of the Independent Telephone Pioneer Association.

Virginia Company Celebrates 60 Years' Service

The Clifton Forge-Waynesboro Telephone Co., Staunton, Va., celebrating 60 years of active service, was honored at a fall dinner meeting of the Covington (Va.) Chamber of Commerce on Oct. 29.

Starting in 1897 with five telephones, the company has grown until at present it has 100 employes, 500 stockholders, a $400,000 annual payroll, and more than 5 million dollars in property. Fred T. Prufer is president of the company.

Bell Executives Study National, World Problems

High officials of the Bell System make up the student body of a "school" in Asbury Park, N. J., designed to stimulate the thinking of executives within the system on problems facing the nation and the world, it was reported on Nov. 6.

Located in a hotel, the school will continue through June 1958. It is called the Bell System Basic Executive Conference. Enrolled are departmental heads and others of top management who have been with the Bell System from 20 to 30 years.

Charles W. Potter, director of the school, said, "We are trying to open mental windows for men who have spent their lives within a single department in a single company.

"We assume that all of the Bell executives are experts within their technical spheres. This course gives the men an opportunity to get away from their jobs in order to study and discuss not only telephone problems, but what is going on around them—in the nation and the world."

DESIGN OF SMALL COMPANIES

Concluded from page 23

nessed, in which he indicates any and all liens which might be in effect. However, if fraud is involved on the part of the seller, legal expenses would be encountered, which would not be necessary if the proper steps were taken before the purchase agreement was completed.

Any abstract office will supply the information for a small fee, the amount of which is determined by the work involved. However, this does not include any title records which might be made between the time of the abstracter's check and the recording of the deed which conveys the property to the buyer.

A title guarantee policy would eliminate the majority of the above possibilities. If the cost of bringing the abstract up to date is in excess of $50, an alternate course, providing for a "Title Policy," should be considered. This policy can be secured through the abstracter and the cost is not too great.

In this case, a company issuing the title policy will have its trained employes search the records in the county recorder's office and will issue the policy if any and all claims against the title can be cleared. If the policy is not issued by that company for reasons of its own, a new location should be decided upon, since a clear title cannot be secured for the agreed purchase price.

Land transfers made by warranty deeds, quit claim deeds, and land contracts are the three methods which could be used to convey the title of property, but in the case of a company acquiring property for telephone operations, the long-form warranty deed is by far the most desirable when the interests of the investors and the regulatory commission are considered.

A land contract might be used if financial conditions make that procedure necessary, although the advice of the regulatory commission should be sought before entering into a contract of that type for telephone purposes.

In either case, the legal description of the property under consideration should be clearly and completely stated on the deed and the seller and his wife, if any, should both sign the document in the presence of two witnesses, with the entire procedure being sworn to before a notary public, after which he should so attest in the space provided for that purpose. It is questionable whether the register of deeds will accept the paper if the names of the sellers and witnesses are not clearly printed or typed below each signature and if the notary public has not dated, signed and placed the impression of his seal on the deed.

The consideration paid for land is shown on deeds in various ways, from the actual amount paid for the property to $1.00 to make the transaction legal. In any event, federal law requires that a 55-cent revenue stamp be attached to the deed, and dated and initialed by the seller, for each $500 of the sale price. The purchase of these stamps is the obligation of the seller.

The recording of the deed with the county register of deeds is a necessary step in order to transfer the title to the buyer.

MOUNTAIN STATES LOOK TOWARD SAFETY

Continued from page 34

quirements of production, service, economy, quality, etc.

2. Every job can be done safely and shall be done safely or it shall not be done at all.

3. Management has accepted the responsibility of providing a safe method of doing the work under any and all conditions.

4. Every employe must accept his personal responsibility to abide by the safety rules as an integral part and condition of employment.

Up to 1954, the company concerned itself primarily with on-the-job accidents. It now promotes safety on a 24-hour basis, by encouraging more first aid programs, inserting safety articles in company house organs going to the home, and mailing safety publications directly to the home in an attempt to make safety "a family affair," a responsibility shared by both American management and the American workman.

Long-range planning is today's responsibility if we are to meet tomorrow's communication needs, said E. H. Danner, president of the General Telephone Co. of the Southwest, San Angelo, Tex. The rapid population growth, shifting age balance, change in disposable income balance, the industry's movement away from transmission of the spoken word as its principal service—all these are trends of today which require planning for tomorrow. Such planning does not need to restrict freedom of action, it was stressed, but should serve as a guide, and as such, should be constantly reviewed and adjusted to reflect current factual data.

The 36 per cent increase in population and households forecast for the period between 1956 to 1975 will have important effect on communications. The broad growth in population patterns, it is forecast, will trend toward the far west and the south, are influenced by water and climate and will follow the highway networks being built between the great population centers. The big "explosion" in population boom is to occur in the suburbs (since 1950 there has been a 9 per cent increase in total population but the suburbs grew 34 per cent). Farm population is expected to decrease from 22 million today to about 15 million in 1975.

Another trend which has implications for the telephone industry, is the fact that, while our population has been predominantly under the age of 10 and over 60, by the year 1960 a change will manifest itself: The number of children reaching the teens will increase by 40 per cent, to reach a total of more than 3.8 million. This teen age boom will mean a substantial increase in families by 1970, and may usher in the next great building boom, with attendant requirements in communications.

Another factor to be taken into account is that, at the production level possible in 1960, the number of families with over $4,000 disposable income could climb to 36 million, or triple the 1950 figure, representing substantially increased markets for goods, services and investments, it was pointed out.

We are now out of the one-telephone-per-house era, Mr. Danner said, and "are moving more and more from the position of being a voice communication organization to a true communication system, providing facilities for the transmission of all types of information and data by electrical transmission.

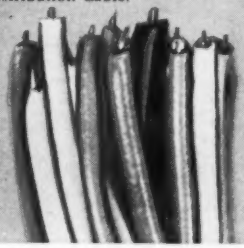
"We can not wait to be pushed into providing such service, but must make market surveys and carry on the merchandising efforts to keep us informed of the latest demand."

Discussing "Is There a Larger Market for Home Telephone Service," D. D. Phelps, assistant vice president of the Mountain States Telephone & Telegraph Co., also underscored the tremendous upsurge in population and continued improvement in family income and their import to the industry, particularly the home telephone market. University of Michigan findings show there is evidence of "intention to buy" among all income groups, but as might be expected, the "intention" moves up with family income, and needs and interests have to be converted into positive desires.

Mr. Phelps, in discussing probable

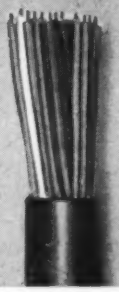
THE MESSAGE IS: MONSANTO

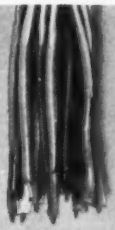
Sturdy OPALON 72285 over primary insulation for color-coded, weather-resistant jacketing. Polyethylene 14202 and 11302 for primary insulation of conductors and insulation for steel support wire in Multi-Pair Distribution Cable.



Polyethylene 12203 and 12253 for primary insulation, Polyethylene 14202 for jacketing in jacketed Thermoplastic-insulated, Thermoplastic-sheathed Telephone Cables.

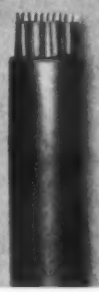
OPALON 1706 for semi-rigid primary insulation in various types of communication cable.





Rugged weather-resistant color-coded OPALON 72285, available in eight standard colors, for primary insulation and Polyethylene insulation for steel support wire on Urban Distribution Cable.

OPALON 1006 for primary insulation, OPALON 72217 for jacketing in Inside Telephone Wiring Cable.



your finest single-source for **polyethylene and vinyl** *telephone insulating compounds*

Wire and cable producers like the multiple choice that Monsanto supply offers—9 formulations, polyethylene or Opalon vinyl, all specially developed for critical communications applications.

Here, from one great single-source, are the insulating compounds combining the many different mechanical and electrical properties you need . . . insulating efficiency, extrusion characteristics, surface finish, weatherability, colorability.

Call in your local Monsanto representative for the full communications story, or write for technical data and other information to Monsanto Chemical Company, Plastics Division, Room 3082, Springfield 2, Massachusetts. OPALON: REG. U. S. PAT. OFF.

MONSANTO

growth in the future market, quoted Stanley Resor, chairman of the board of the J. Walter Thompson Advertising Agency, who said that in the last six years the number of families with over $4,000 of income, after taxes, jumped from 12 million to 26 million. By 1960 this group is expected to exceed 36 million.

A home telephone market survey made by the Bell System using a 5,500-home sampling, taken to be representative of the 28 million homes in the Bell System with service, showed that 84 per cent had only one telephone, leaving a market for additional service of about 23½ million of the total Bell homes, he said. Nine out of every 10 users who had additional telephones commented favorably, and reported that they would not be without them.

The survey indicated that 13 per cent, or 4 million home users, desired additional telephones and feel they will be in the market for an additional telephone within the next two or three years; 47 per cent want them in the bedroom . . . "when you consider there are 70 million bedrooms in Bell System homes, this is quite a market for additional telephones in bedrooms," Mr. Phelps pointed out.

The study pointed up the fact that people are not as familiar with the cost of additional telephones as is desirable. About one-half did not know costs, and more people over-estimated, rather than under-estimated, such prices. The survey would indicate that the merchandising objective is to create the desire for additional telephones in the 84 per cent of homes with only one telephone, and Mr. Phelps suggested that the industry talk to customers about installations in terms of *all* living areas, making an effort to stress always the convenience of extensions, but also point to their beauty, comfort, style and usage. "Let's not forget extra listings for complete family identification, auxiliary signals, illuminated dials, volume control telephones and home telephone planning that will induce builders to provide concealed wiring through numerous outlets in new homes," he added.

The survey indicated that color has user-appeal, creates desire. Significant facts among the findings were that 92 per cent of the customers said they have never been asked to add an additional telephone. Also, two-party and four-party customers want individual lines, and it seems that customers with one-party and additional telephones "like the telephone company better."

All this, Mr. Phelps concluded, suggests that business office people must be real service advisers, getting the facts about a family, analyzing requirements, and recommending the kind of service which best meets the needs of the family.

Another featured speaker on the program was R. E. Larsen, Director of Utilities, Idaho Public Utilities Commission, who spoke on regulatory matters.

Directors elected to serve the Rocky Mountain association for two-year terms are: C. A. Blakeney of Carlsbad, N. M.; Rulon Callister of Delta, Utah; J. W. Christian of Pioche, Nev.; E. P. Corbin of Monticello, Utah; Donald Dickson of Rupert, Idaho; C. M. Hart of Kingman, Ariz.; Charles McLean of Kalispell, Mont.; Floyd L. Reyher of Haxtun, Colo., and Grid Rowles of McCall, Idaho.

Directors elected for one-year terms are: J. W. Baker of Coeur d'Alene, Idaho; Ward Blazzard of Kamas, Utah; Earle Crandall of Pinedale, Wyo.; C. W. Haas of Big Timber, Mont.; D. A. McLean of Denver, Colo.; H. B. Norman of Gunnison, Utah; J. E. Tipton of Espanola, N. M., and M. O. Trego of Sundance, Wyo.

The directors elected the following officers: President, Mr. Reyher of Haxtun, Colo.; vice president, Mr. Norman of Gunnison, Utah and secretary-treasurer, Mr. Baker of Coeur d'Alene, Idaho.

TELEPHONY IN STATE DEVELOPMENT

Continued from page 46

business, every other type of investor is entitled to share proportionately in the growth of our economy, but he cannot share in it. He is to be confined to the dollar earnings of his original cost investment.

"The inescapable effect of this would be a flight from utility investment at the very time when more and more capital will be needed to realize our opportunities of further expansion.

"Let me hasten to add that I am not at all pessimistic about this over the long run. But, I mention it in passing as one of those problems which still has to be licked."

Turning his sights to the more pleasant aspects of the future, Mr. Power dealt with these prospects under the heading of five "S's"—Service, Size, Shape, Scope and Success. These are developed in full in Mr. Power's address to the USITA national convention, reprinted in TELEPHONY, Oct. 26.

Frank T. de Vyver, chairman of the Department of Economics and Business Administration, Duke University, described "The Place of Personnel Management in the General Management Program." Mr. de Vyver stated that since the telephone industry is a service industry, it is particularly important that proper personnel be selected for contact with the public.

Furthermore, the personnel manager position should not be filled in a makeshift manner; on the contrary, this post should have a well-trained staff manager reporting directly to the chief executive officer or head of the division, he said. In short, he should have a high place in management.

In small companies, probably the president must be the personnel manager, Mr. de Vyver said; in any case he should be familiar with the techniques of personnel management, he emphasized.

Mr. de Vyver included in his talk a description of a foreman, faced with a difficult personnel problem, and who might prevent the matter from proceeding to arbitration by seeking advice early enough from the personnel manager.

Mr. de Vyver advised that personnel managers should give to top management decisions which are straightforward and honest rather than what top management wants to hear.

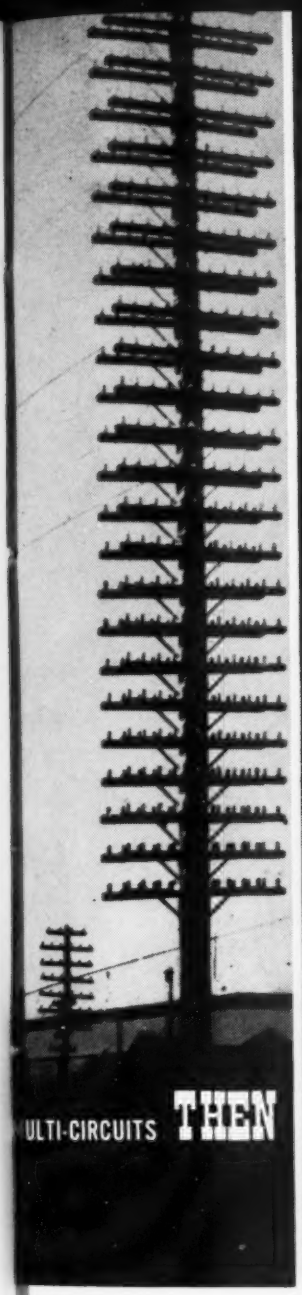
Speaking on "The Growing Importance of Public Relations," J. M. Wasson, North Carolina vice president and general manager of Southern Bell Telephone & Telegraph Co., said that "failure to recognize the growing importance of public relations could possibly be fatal to our continued progress as a financially healthy segment of American industry.

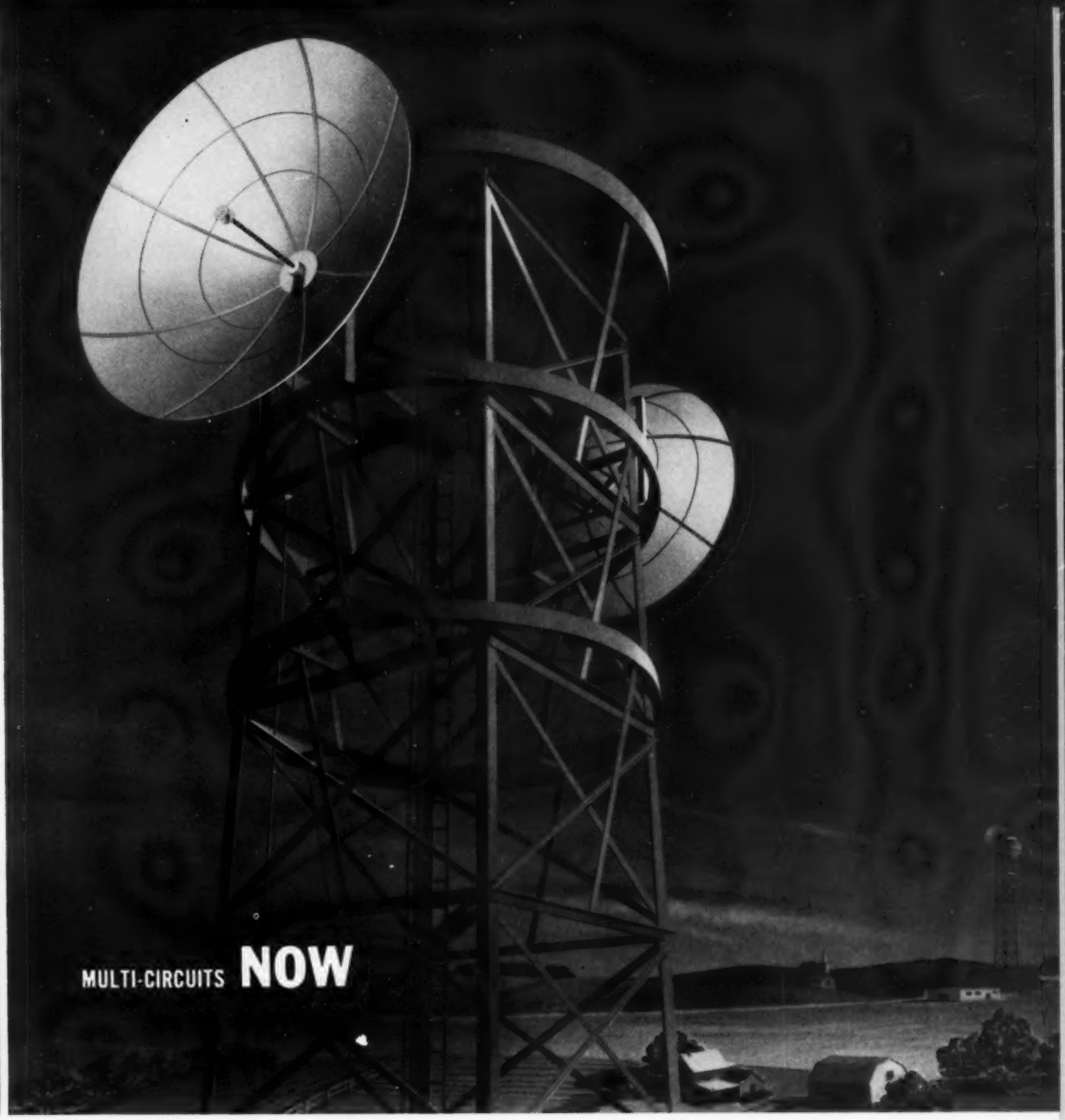
"We have been so busy getting the job done—which involves handling tremendous volumes of long distance traffic, building central offices . . . and the various myriad duties that make up a telephone operation, that we have not taken the time to tell the public of the good job our companies are doing and of their value to society."

Mr. Wasson pointed out that 30 cents of every revenue dollar taken in by the telephone industry goes for taxes, federal state and local—including the 10 per cent federal excise tax not levied on any other commodity of comparable necessity. His comment: "We have failed to inform our employes and the general public concerning taxes and as a result of that failure we are saddled with a tremendous tax load."

Next he mentioned that the industry has failed to keep the public informed on the matter of utility earnings and thus the matter is particularly misunderstood by them. Referring to charts

(Please turn to page 58)





60 years of Independent Telephony ...a story of towering progress

The 60 years of phenomenal growth of the Independent Telephone Association provides America with one of its more striking success stories.

For many of these years Blaw-Knox has played a vital part in communications. Today, Blaw-Knox Towers are helping the Independents supply dependable, economical service to an ever increasing number of subscribers. Built to rigid specifications, these towers play an important role in an industry that now serves over 9,000,000 telephones in over 10,000 exchanges.

Today, more and more progressive telephone companies are turning to microwave as the newest advance in improved communications. By beaming countless messages through the air, many Independents are boosting service efficiency, trimming operating costs.

In keeping pace with the times, Blaw-Knox Microwave Towers provide the sure support needed for dependable transmission, the wide flexibility required for expansion of microwave facilities.

For additional information, write for Bulletin 2538.

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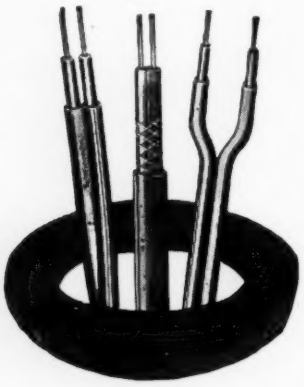
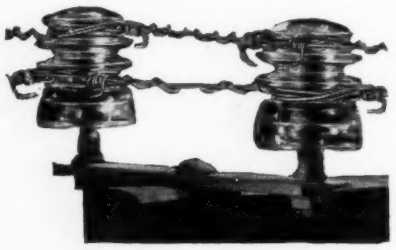


Long Service Life and Low Plant Costs go hand in hand with the installation of ENDURPRENE — The Neoprene Drop Wire available in both Copperweld and Bronze. This flexible and easy-to-handle wire is made by GENERAL INSULATED WIRE WORKS, INC.



Double-Groove Transposition. Insulator (No. 56) is employed for all circuits (exchange, toll, or trunk circuits) that employ tandem type transpositions. The test of time has proved the high quality of these Hemingray Insulators—a product of OWENS-ILLINOIS.

The Cook PLX Cable Terminal is designed for use on plastic cable that is looped through the terminal without cutting the wires and the desired pairs terminated for distribution. Protection is optional. When ordering, specify cable diameter for correct size grommets. COOK ELECTRIC COMPANY.

You don't have to carry large inventories. The line supplies you want are as near as your phone. At your regional Kellogg warehouse thousands of square feet are devoted to stocking the line supplies you need. Trained telephone men help you with your orders and make sure deliveries are made when specified.

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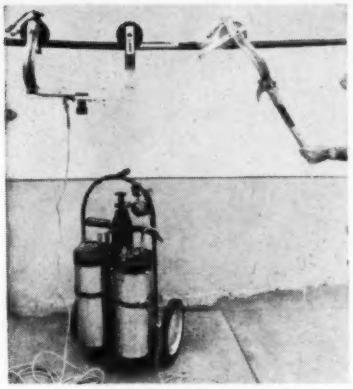
Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy, with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.



Cable Leak Detector—Two models are illustrated. Model at left is for high cables. Nozzles spray cable, air pressure from tanks causes air bubbles clearly seen from ground. S & G MANUFACTURING CORPORATION.

Corrosion-Resistant Crapo Stainless Steel Cable Lashing Wire, Type 430, is available in .045", .065", and .061" diameters. Crapo Galvanized (C Coated) Steel Cable Lashing Wire is available in .091" and .061" diameters. Made by INDIANA STEEL & WIRE CO., INC.

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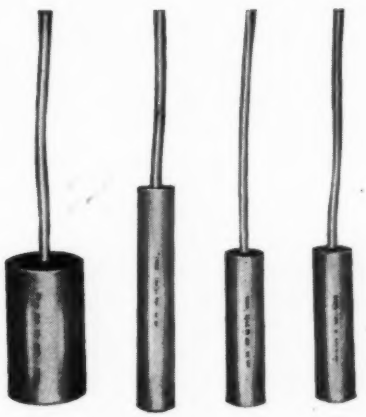
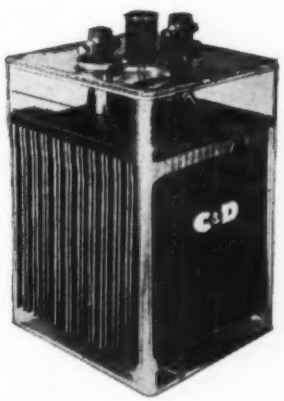


Application of Loading Coils on telephone circuits reduces unit loss to ½ or ¼ the nonloaded value—coils are designed for use on 2-wire telephone circuits in non-quadded paper insulated or plastic cable. COMMUNICATION EQUIPMENT & ENGINEERING CO.



Extra-Long Life!—The suspended and supported plate construction is an exclusive feature of C&D BATTERIES. Choose C&D PlastiCal (lead-calcium grid) for life expectancy of 25 years . . . for 14 years expectancy, specify PlastiCell (high tensile lead alloy grids). Made by C&D BATTERIES, INC.

to emphasize his points, Mr. Wasson showed a comparison of earnings on capital of the 50 largest U. S. manufacturers with the earnings of the Bell System and Southern Bell. He said the point is not that in each period the rate of earnings of the 50 largest is higher than Bell System and Southern Bell, but that in the postwar period the disparity has become tremendous. He continued:

"Their earnings reflect the prosperity of the times; ours do not. Yet today we must raise more new capital than ever before and compete with these prosperous companies, among others, to get it. . . .

"If we are to successfully compete in the raising of capital funds, we must be allowed to compete with businesses with similar risks and uncertainties. We must be allowed earnings sufficient to permit us not only to do today's job but to plan and build for the telephone service our customers will want and need tomorrow."

Mr. Wasson proposed the following public relations program:

(1) Do a good telephone job—and make sure the employes and the public know about it.

(2) Maintain a sound, long-range employe information program.

(3) At local level of management, know intimately, and have regular contacts with, the press, radio and television people. Together they represent the voice of the public, and elected officials respect them highly.

(4) Do a good citizenship job.

(5) At all levels of management, take every opportunity to appear before public groups on telephone matters.

(6) Contact, at the local level and on a regular, scheduled basis, leaders of thought and action in every community in which we (Bell and Independent) operate.

Following are the directors for the coming year: W. S. Beddingfield of Mount Airy; L. S. Blades, Jr. of Elizabeth City; J. E. Cline of Southern Pines; L. D. Coltrane Jr. of Concord; E. O. Freeman of Aberdeen, and L. D. Garibaldi of Matthews.

Also W. C. Harris of Lexington; J. F. Havens of Tarboro; H. D. Holderness of Tarboro; H. E. Hussey of Durham; F. G. LaPrade of Martinsville; J. D. Morris of Roxboro; J. L. Runkle of Asheboro; T. H. Sawyer of Weaverville; J. H. Snider of Denton, and Robbins Tilden of High Point.

The directors elected the following officers: President, Mr. Garibaldi; vice presidents, P. J. Long of Tarboro; Mr. Cline, and R. E. McKelvey of Sylva; secretary-treasurer, James H. Bell of Weaverville.

Develop Simplified Method For Aluminum Soldering

Simple and effective techniques for soldering aluminum and its alloys as well as galvanized metals have been developed by G. M. Bouton and P. R. White, metallurgists at Bell Telephone Laboratories.

These techniques employ an inexpensive and stable zinc base alloy as a preferred solder, and no flux or vigorous abrasion is necessary. Joints in aluminum made by these methods are stronger than commercial aluminum itself.

Because of their simplicity, the techniques are expected to find widespread applications both in industry and in the home workshop. They are most effective for those types of joints where the surfaces are accessible for manipulation with the solder stick, such as butt and "T" joints.

Long term stability of the soldered joint is assured by the rigid exclusion from the high purity zinc base alloy of deleterious elements such as lead, tin, bismuth and cadmium to prevent intergranular corrosion. A fraction of a per cent of magnesium may be added to enhance its stability, and up to several per cent of aluminum may be included, Bell Laboratories reports.

In soldering aluminum it is not necessary to remove rolling mill oils or the surface oxide from the area to be wetted. A single stroke of the solder stick across the heated aluminum surface will cause the solder to penetrate the oxide and wet the aluminum. The normally tenacious oxide film is lifted off much like paint peeling from wet wood. This raised oxide coating may then be wiped aside.

Surfaces thus wet can be joined by bringing them together and adding more solder by drawing the solder stick across the hot metal pieces. Heat may be applied electrically or by means of torches burning common fuels.

This soldering technique is equally effective for joining galvanized surfaces without a flux. Joints produced by this method are strong and stable.

G. M. Bouton demonstrating the aluminum soldering process developed at Bell Telephone Laboratories.

EXCISE TAXES MUST GO

Concluded from page 19

tional Association of Railroad and Utilities Commissioners have already adopted such resolutions. Wherever possible individual subscribers and consumer groups should be urged to write.

Third, there should be a cooperative and coordinated effort on the part of all telephone companies, both Bell and Independent, to push this reform and push it hard in the best interest of their subscribers.

Telephone excise taxes must go!

Finds Regulatory Lag Affects Investor Interest

Commentary on how the regulatory lag in the telephone industry brings about a lessened interest in telephone stocks by prospective investors, appeared on Nov. 3 in an *American Weekly* article written by Harold M. Finley, an investment officer of Chicago Title & Trust Co. (*American Weekly* is a weekend magazine section distributed by many large U. S. newspapers. The total circulation: 10,307,458.)

Mr. Finley's article was titled: "You Can Do Something About Inflation." Excerpts follow:

"It is possible to do something about inflation. . . .

"We would prefer a form of insurance which requires little care and supervision, will not be taxed exorbitantly, but can be cashed quickly. We want to buy our inflation hedge in convenient units, and would like some income.

"Stocks and convertible bonds seem to fill the above requirements. . . .

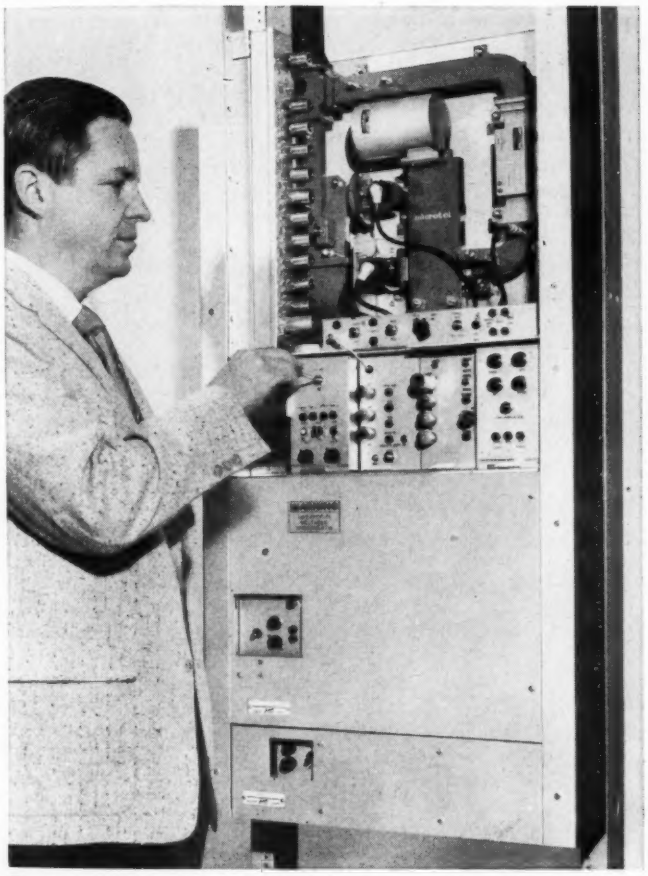
"When you decide to invest, keep in mind these six important points:

"(1) Labor should make up a small percentage of the company's total cost of doing business. . . .

"(2) Freedom from fixed selling prices is important. Despite the tremendous increase in the use of the telephone since 1922, the dividend on a share of American Telephone & Telegraph stock has not changed in 35 years, partly because rate increases have lagged behind rising costs and have had to await action of regulatory bodies. The same general situation has disturbed public utilities, railroads, and bus companies. . . ."

Expand toll circuits this fast economical way—

microtel



Basic terminal of Microtel equipment consists of transmitter, receiver, and power supplies.

NEW LENKURT microwave system designed for telephone use

Microtel Type 74A equipment operates in the 5925-6425 mc common carrier band. This new system is clean in design, highly reliable, and so flexible it meets the needs of telephone companies of all sizes.

In its simplest form, a Microtel terminal consists of a microwave-frequency waveguide assembly, intermediate-frequency amplifier, four plug-in units for input and output circuits, power distribution, and alarms and system supervision. All plug-in units are similar to Lenkurt's 45-class equipment, simplifying routine maintenance and inspection.

Like Lenkurt 45-class carrier equipment, Microtel is easy to expand. A system installed initially with only a few carrier channels, can be expanded economically to a high-density inter-city system. With 8 transmitters and receivers operating over a common path, a system can handle up to 1920 voice channels, plus 128 or more supervisory, remote control, or telemetering channels.

FEATURES:

- ***Power options***—Operates from standard office battery supplies or from 115-volt a-c mains.
- ***Ease of installation***—Standard 19-inch rack mounting; compact plug-in construction; space saving, back-to-back installations.
- ***Ease of maintenance***—Components accessible from front; built-in test facilities.
- ***Standby flexibility***—Frequency diversity or space diversity; combining or transfer facilities.
- ***Economical expansion***—With r-f circulators, 2, 3, or 4 terminals can be added to same antenna system.
- ***System length***—Up to 300 miles with medium loading and multiple repeater points.
- ***Repeaters***—Back-to-back terminal equipment permits dropping and reinserting of channel groups; automatic switching permits unattended operation.

New, *illustrated booklet includes Microtel technical summary, application ideas, additional helpful information. Phone Fillmore 5-7111, or write today for your copy. Automatic Electric Sales Corporation, Northlake, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto. Offices in principal cities.*

AUTOMATIC ELECTRIC

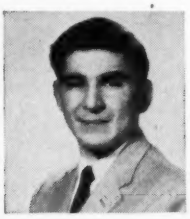
A member of the General Telephone System—
One of America's great communications systems

GENERAL TELEPHONE SYSTEM

construction and maintenance DIGEST

- Real cool sitting
- Plastic armor
- 3 ways better
- 25-year battery
- Most for least

Published regularly to help you get the most out of your materials and supplies dollar



by Frank R. Kasper, Inside Sales—Atlanta

At our house, we have a dynamo of atomic automation—she's just under 2 years old and keeping up with her is a big job—but fun. It's just the same keeping up with your needs for supplies: big job—but fun. It's satisfying work to know the parts and equipment I send you—are finest in the world. Why am I so sure they're best? Because they come to you with a double guarantee—the maker's . . . and Stromberg-Carlson's. And along with the protection you get from Stromberg-Carlson's 62-year reputation—you get the promise of new and better telephone equipment from the research program your orders help support. Thanks for the mighty fine business you've given us—we sincerely appreciate it!

Cane-seat chair keeps operators cool, comfortable

Making the operator as comfortable as possible may not strike you as a "maintenance" problem — yet your service is much smoother when the girls are cool and relaxed.

This operator's chair has a cane seat, which is much cooler, cleaner and more comfortable than other types. It retains all the posture advantages for which Sturgis is famed. It is called the Sturgis SC-240.

The posture-curved, well-cushioned backrest is covered in genuine leather.

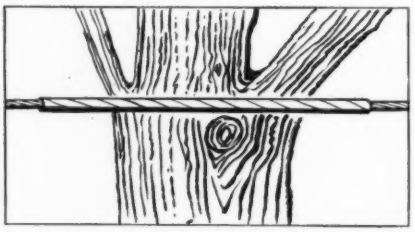
The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color, and a handy purse holder, available on request. Six seat heights, all adjustable.

Long-lasting protection at low cost

You get effective, long-lasting, inexpensive protection of covered cables or conductors with Preformed Plastic Line Guards.

Easily installed by hand, these line guards protect against abrasion by trees, buildings and other obstructions. They fit as securely as metal line guards.



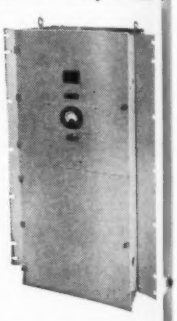
Standard stock sizes in 6-foot lengths. Other lengths available on order.

PLP Plastic Line Guards are available from stock in standard 6-foot lengths. Or you may order them in 3-foot, 9-foot and other sizes.

Your Stromberg-Carlson representative can offer prompt delivery on your order.

Raytheon Rectricharger® Battery Chargers—Complete Line 3-400 Amperes

Entirely redesigned new Raytheon Rectichargers offer three major improvements:



New Raytheon battery chargers feature ± 1% no-load to full-load regulation

1. ±1% no-load to full-load stabilization prevents battery overcharging, minimizes gassing, lengthens battery life.
2. No audible hum at output terminals.
3. Most compact units on the market—wall or rack mounted.

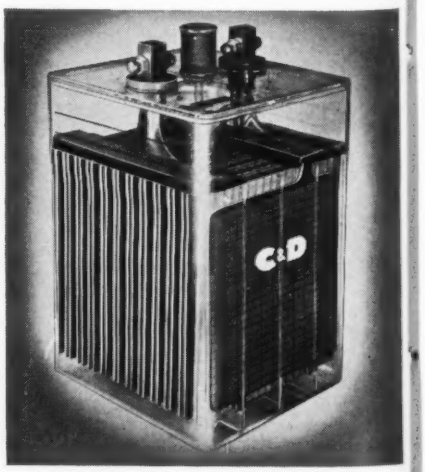
Automatically compensated for rectifier aging, Rectichargers offer high efficiency, completely automatic regulation. No moving parts and self-protecting circuitry assure minimum maintenance, long life. Single and three phase, 3-400 amps.

Built by Raytheon, supplied to you by your Stromberg-Carlson representative.

Battery will still have its pep when 1982 rolls around

It will last 25 years—in full float service! That's the life expectancy of C & D's PlastiCal (lead-calcium grids) telephone battery.

You get this extra-long, trouble-free operation because C & D Batteries, Inc. use an exclusive suspended and supported plate construction.



In full float service, this telephone battery stays on the job a quarter of a century.

XUM

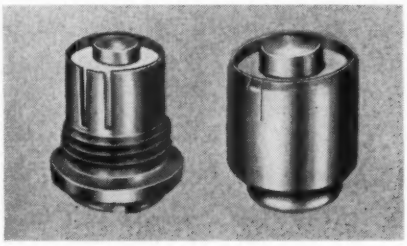
Illustrated here is a typical C & D telephone battery with a 660 A.H. capacity. When ordering this 25-year battery, specify PCE-660.

When you find that a 14-year expectancy meets your needs, you can get dependable operation from a C & D PlastiCell (high-tensile lead alloy grids) battery. For a PlastiCell with capacity of 660 A.H., specify CE-23.

You can order either of these C & D telephone batteries, plus other capacities, from your Stromberg-Carlson representative. Ask him about extra-long-life power supply with C & D Batteries.

Arrester gives maximum protection

With the Cook Mytigap Arrester you get the utmost in cable terminal and substation protection at low cost.



Mytigap Arresters.

Cook Electric Company's Mytigap is a lightning arrester and power-cross protector in one, featuring self-restoring operation after functioning. It is available in 2 styles: a snap-in type to fit Cook terminals and a type that is made with special screw-type housing for general applications.

Mytigap Arresters require minimum attention or service. Internal parts are readily accessible for easy field replacement if damaged by extreme disturbance.

This arrester represents the most advanced high-potential dischargers for line and cable protection.

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

FIVE YEARS OF QUASI-PRIVATE OPERATION

Concluded from page 21

of residence telephones by expanding party-line service, so famous in the United States. There are now about 170,000 partyline subscribers in Japan, or 7 per cent of the total. Of this, 151,000 have two-party, 10,500 four-party, and 7,400 multi-party service.

Rural multi-party service using magneto equipment, was first tried out about eight years ago. We now have 7,400 multi-party subscribers using this equipment. We have another 9,600 subscribers on four-party magneto lines. There are many unfilled orders.

We have tried out dial party-line service using crossbar equipment, in the city of Takasaki, and in two community dial exchanges nearby. The two-party dial service has proved surprisingly popular—so much so that in less than two years, we exhausted our available lines. The eight-party dial lines remain to be filled.

The difficulty in filling eight-party lines in a city in Japan comes in part from the high installation charge. The installation charge is $39.70 for multi-party lines. People prefer, instead, to use four-party service, for which the installation charge is the same, but for which the monthly rental is only 50 cents more.

We are experimenting now with secrecy on party lines. European telephone companies have tried this out with varying results. The technique is an old one. With it, if one party is using the line, the others are cut off completely. The secrecy sounds attractive, and is—until some grave emergency occurs, such as robbery, accident, severe illness, fire, etc.—when the telephone is worthless because the other party is using it and cannot be requested to hang up while the emergency is disposed of.

At any rate, we are going to try out secrecy party-line service, and determine if it is—for our people—satisfactory. We hope it is, because Japanese, like others, ordinarily do not like to have their calls overheard.

Yachiyo post and telephone office. To the right of the thatched roof structure is the Yachiyo telephone office. It is one of the magneto exchanges which offer party line and rural multi-party service.

In the United States, you sometimes refer jocularly to your rural service as "gossip service," for it enables farm people who are lonely, to keep surreptitiously in touch with the doings of their neighbors thousands of yards away.

In Japan, we are so crowded that even farmers are usually not so far from their neighbors but what a shout will bring help. We, too, have people who like to know what their neighbors are doing, and we have an age-old way of satisfying that requirement—one which does not require a party-line. We call it "ido-bata banashi," or "chattering by the well."

Fortress Against the Tides

"Philosophy alone makes the mind invincible, and places us out of the reach of fortune, so that all her arrows fall short of us."—SENECA.

Anglo-Belgian Submarine Cable Opens Next Spring

In time for the opening of the 1958 Brussels Universal and International Exhibition in April 1958, a new submarine cable will extend telephone facilities between Belgium and the United Kingdom, British Information Services reports.

This Anglo-Belgian submarine cable telephone scheme will provide for 120 two-way telephone channels. This is said to be the first time in the development of submarine cable telephone systems that one commercial organization has undertaken manufacture of the undersea cable, the submerged repeaters, and the supply and installation of the land-based terminal equipment and cable. The organization comprises the Standard Telephones & Cables Ltd. of London and the Bell Telephone Manufacturing Co. of Antwerp.

The whole of the 55 nautical miles-long submarine cable and the three repeaters will be manufactured at the British company's factories, where special facilities exist for this type of work.

The British Post Office and its counterpart in Belgium (Régie des Télégraphes et des Téléphones) are responsible for the services. The cable will cross the British and Belgian coasts at Dumpton Gap and Middelkerke, and will be extended by land cable up to Canterbury and Ostend respectively. There the new line will be fully integrated into the national and international networks so that the additional facilities provided by the new link become available to all.

Illinois Bell Head Gives Views on Scientific Race

The views of William V. Kahler, president of Illinois Bell Telephone Co., part of a forum on "Why the Russians Surge Ahead in Science," were quoted on Nov. 5 in a *Chicago Daily News* story written by Helen Fleming.

Mr. Kahler said:

"Citizens must set the stage for scientific advance, not wait for the government to do it.

"Our country, thank goodness, runs on incentives, not force.

"We won't get the scientists our country must have for future survival by forcing young people into this field, but we can attract them.

"Too little incentive is offered the talented person to go into basic research—and stay there.

"More industries should support this type of research. More money, and more honor, is due those scientists and teachers who explore the unknown."

John T. Rettaliata, president of Illinois Institute of Technology, was quoted as saying, "You get what you pay for, and Russia pays her scientists well—reportedly three times what the United States does . . .

"Americans should remember these homilies when they fret over being outdistanced by Russia in the race to launch space satellites.

"Russia is practicing what Americans preach in these familiar sayings, and it's paying off in scentific accomplishment."

With Major Lenox R. Lohr, president of Chicago's Museum of Science and Industry, Mr. Rettaliata hailed the recent action of the Department of Defense in loosening the pursestrings on spending for research, the article continued.

The two men commended Defense Secretary McElroy's prompt action in setting aside his predecessor's order freezing 170 million dollars that had been earmarked for military research.

Chance Names Daly Head Of Product Distribution

G. Mayne Daly has joined the A. B. Chance Co. sales organization as manager, product distribution, according to announcement by L. C. Hansen, director of marketing.

G. M. DALY

Mr. Daly was formerly vice president of marketing for Oliver Electric Manufacturing Co., Battle Creek, Mich., and had been general sales manager of Oliver Iron & Steel Corp., Pittsburgh, before its pole line hardware division was merged with Oliver Electric last year.

Mr. Daly's major responsibility with Chance will be to improve product distribution and service to customers.

Just the right capacity for line work...

develops 1500 watts; weighs only 125 pounds; 4-cycle engine power

This workman is drilling holes in a cross arm with power from an Onan 105AK. Unit can also be removed from truck and easily carried to where it's needed.

Prices reduced on many popular models!

Onan Model 105AK-1P Electric Plant

This power-packed lightweight plant supplies all the power you need for electric drills, saws and other equipment . . . and for floodlighting on night jobs, too!

Quick-starting, 4-cycle Onan air-cooled engine is direct-connected to Onan all-climate generator in a single, permanently-aligned compact unit.

Four plug-in receptacles, pilot light and carrying frame are standard. Other lightweight portable and mobile Onan plants from 500 to 10,000 watts.

To save time and speed work on construction and maintenance projects, equip your crews with Onan Portable Electric Plants.

Call your Onan distributor or write . . .

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

4069 University Ave. S.E., Minneapolis 14, Minnesota

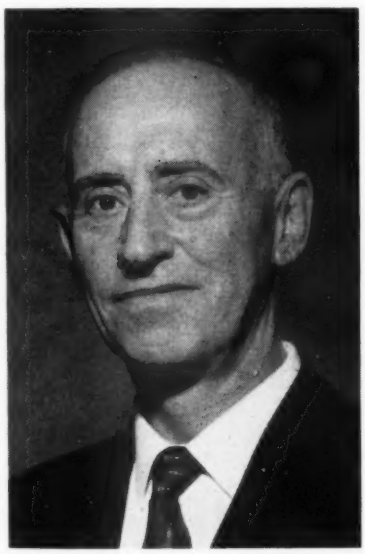
BICC Unit Radio Masts Serve In Far North

The Norwegian Telegraph Service Radio Station at Isfjord on the coast of West Spitzbergen, Svalbard, is the most northerly coast service station in the world. It is well within the Arctic Circle, having a latitude of 78° 3'45" North.

Four BICC Unit radio masts, each 120 feet high, support the station's aerial. These galvanized steel masts, designed and supplied by British Insulated Callender's Construction Co. Ltd., and fabricated by their associated company, Painter Bros. Ltd., are of triangular formation with tubular corner members and welded rod bracings. The masts are in use in more than 25 different countries, according to the British Insulated Callender company.

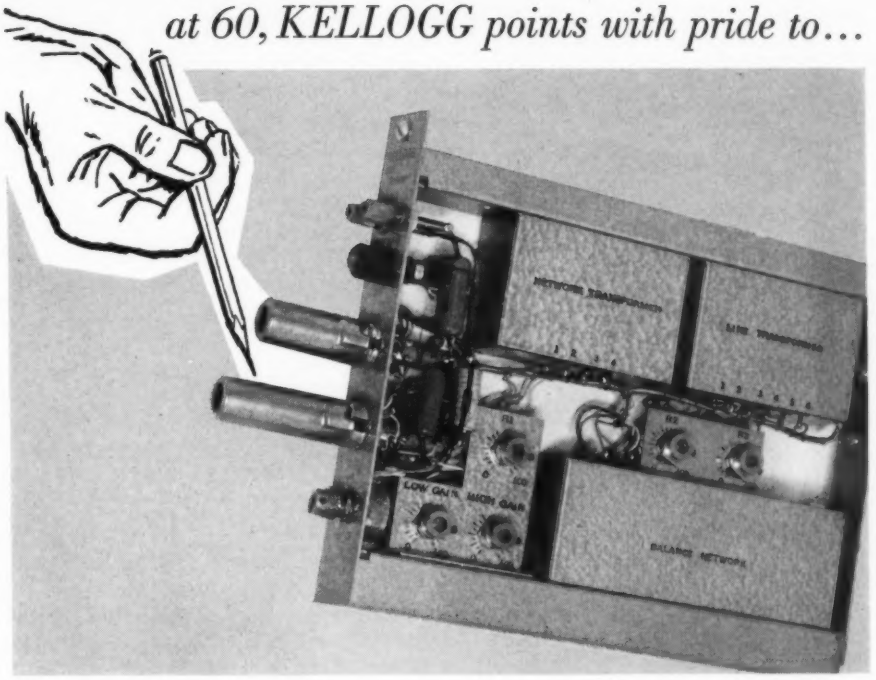
The Svalbard masts were transported to Isfjord by ship from Namsos and were erected by the staff of the Norwegian Telegraph Service.

The station is manned all the year round and provides a full 24-hour service. It is used as a signal station for coastal shipping and maintains a meteorological service. Aircraft of the transpolar airline services find it a valuable landmark.



Donald G. Ihrig, new C&D Batteries salesman in the Chicago territory. Mr. Ihrig is associated with Agair Equipment Co., C&D's Chicago sales representative. He was formerly a sales engineer for railroad batteries with the Thomas A. Edison Co. He has also been associated with the refrigeration division of Waukesha Motor Co. and the Industrial Controller Co., specializing in the application of automatic motor controls.

at 60, KELLOGG points with pride to...



A REPEATER THAT GIVES MORE THAN GAIN

KELLOGG "TYPE Z" VF REPEATER . . . Low operating cost. Low first cost. Reduces transmission losses up to 85%. "Built-in" equalization. Flat circuit response over entire voice band. Variable controls make rapid setup practical. Optimum performance easily obtained. Operates from 48V exchange battery. Sealed components. Plug-in construction. Compactness. Universal application.

KELLOGG A DIVISION OF I T & T

KELLOGG SWITCHBOARD & SUPPLY COMPANY

A Division of International Telephone and Telegraph Corporation

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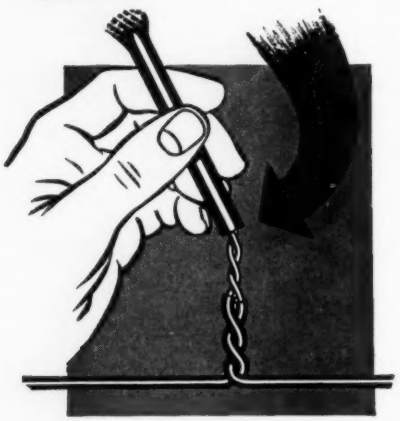
Phone: POrtsmouth 7-6900

"Super-Splice"®
makes splices
waterproof
...from
inside out!

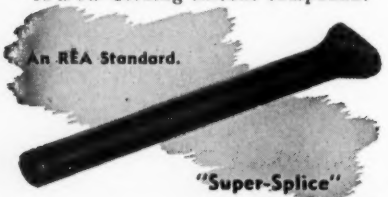


Superior Cable's exclusive economical "Super-Splice" is a plastic splice sleeve. It is sealed at one end and comes to you filled with an insulating and waterproofing compound.*

"Super-Splice" prevents leakage currents and breakdowns in the presence of moisture . . . good for 25,000 v. d. c.

Can be easily removed to re-enter the splice . . . the compound never hardens or oozes out no matter what the temperature.

*A Dow-Corning silicone compound.



"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

SUPERIOR CABLE
SUPERIOR CABLE CORPORATION
Hickory, North Carolina

Du Mont Names Manager for Technical Products Division

The appointment of Frederick H. Guterman as general manager of the technical products division, Allen B. Du Mont Laboratories, Inc., is announced by the company president, David T. Schultz. Prior to joining Du Mont, Mr. Guterman was assistant vice president, sales and planning, at American Bosch Arma Corp.

As successor to Irving G. Rosenberg, vice president, who resigned, Mr. Guterman will be responsible for over-all sales and marketing of oscilloscopes and associated electronic test equipment, automotive test equipment, industrial television systems, and two-way mobile radio systems.

Mr. Guterman had been associated with American Bosch Arma since 1950 as manager of sales planning. He was named assistant vice president in 1954. Prior to that he had been associated with the General Electric Co. from 1945 to 1949. During World War II he served with the United States Air Force in the European Theater and held the rank of major.

He is a member of the Institute of Radio Engineers, the Institute of Aeronautical Sciences, the Institute of Navigation, the Radio Technical Commission for Aeronautics, the Air Force Association, and the American Ordnance Association.

Mr. Guterman is a graduate of Cornell University with a BSAE. He was a McMullen Scholarship student and a member of Tau Beta Phi.

Graybar Appoints Two New District Managers

W. E. Henges, president of the Graybar Electric Co., Inc., announces the appointment of W. J. Goerisch as Atlantic district manager at Philadelphia effective Jan. 1, 1958.

Mr. Goerisch joined Graybar in 1929 at St. Louis as power apparatus department manager and two years later was given additional duties as manager of the lamp and lighting department. In 1941 his duties became concentrated solely on his position of lamp and lighting manager, and in 1946 he transferred to the New York general department as manager of lamp sales.

In 1950 he returned to the field of Power Apparatus when he became manager, power apparatus sales in the general department. In January 1953 he moved to Philadelphia as assistant district manager, the position held until his present appointment.

E. E. Martin, New England district manager of Graybar, announces the appointment of W. G. Glennon as district operating manager at Boston effective Dec. 1.

Mr. Glennon joined the company as a warehouse selector in 1940. He became an office salesman in 1946 and in 1950 was made head office salesman. In 1951 he became district supervisor of training, in 1953 head of stock maintenance and in 1956 manager of merchandise investment, the position held until his current appointment.

IT&T Organizes Canadian Electronics Subsidiary

A new Canadian subsidiary of International Telephone & Telegraph Corp., called IT&T Electronics Service Co. of Canada, Ltd., has been organized in Montreal, it was announced on Oct. 11 by IT&T's president, Edmond H. Leavey.

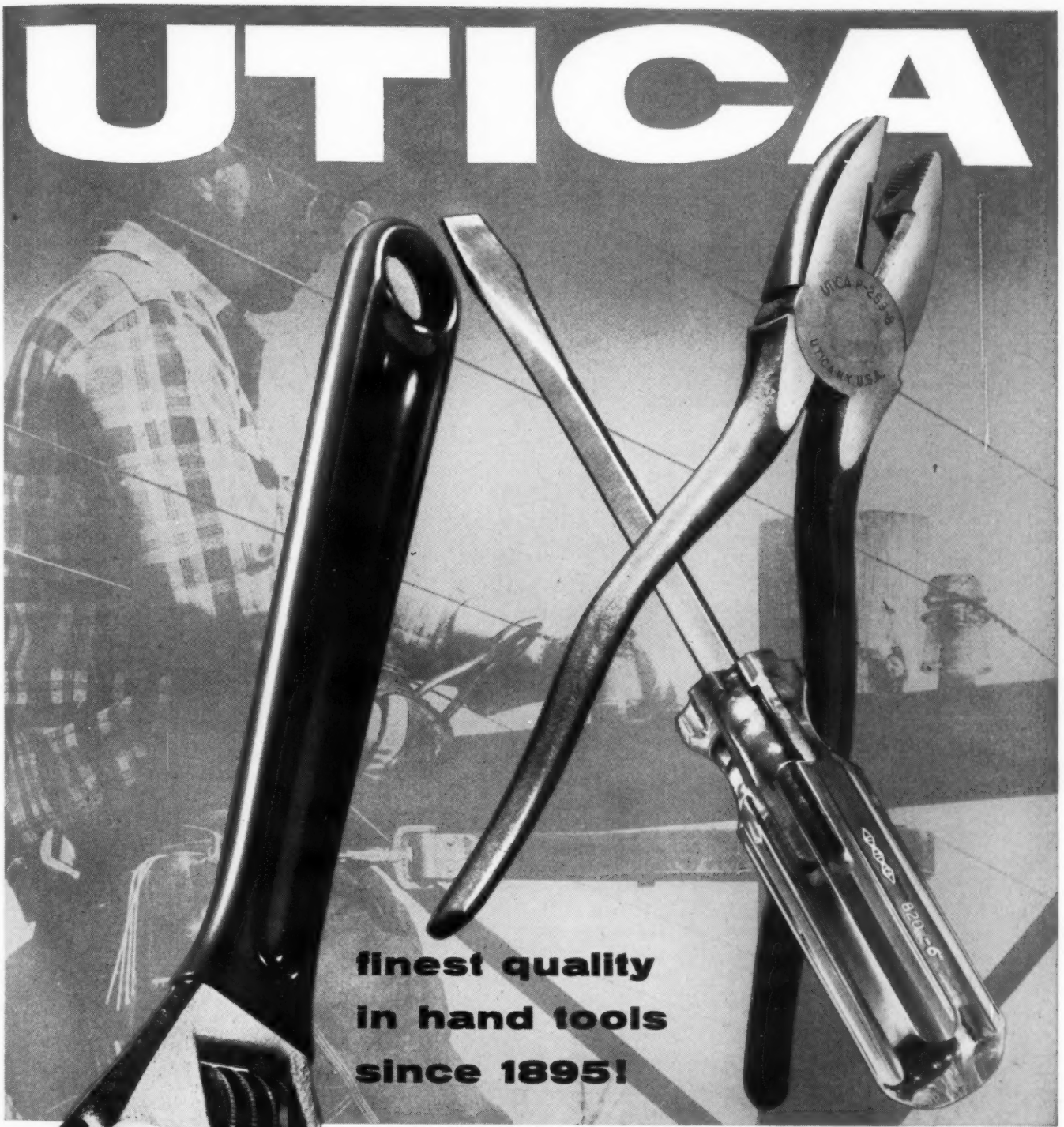
The company will provide services ranging from the installation, operation, and maintenance of telecommunication and electronic equipment, such as microwave links and radar networks, to the engineering of such installations and the evaluation of alternative systems for a given job.

Head of the new company is J. T. Robertson, who has been with IT&T for many years. Starting with IT&T's London associate, Standard Telephones & Cables, Ltd., he later served with the Royal Air Force and Royal Canadian Air Force. In 1948 he went to Winnipeg with Siemens Bros. Canada, Ltd., and in 1952 returned to IT&T with its affiliate, Kellogg Switchboard & Supply Co. of Chicago. Most recently he was assigned to the telephone and radio operating department of IT&T at New York headquarters.

Commenting on the formation of the new Canadian company, Mr. Leavey stated that IT&T's operation of the DEW Line across Northern Canada, and the fact that 85 per cent of the employes in the Canadian section of that northern radar warning system are Canadians, gives a welcome opportunity of employing their talents in Canada when their time on the DEW Line expires. He said, "This pool of experience has been obtained under some of the most difficult conditions the world has to offer, and in view of the current demand for electronic services in Canada arising from its expanding industry and commerce, we foresee great benefits to all concerned."

IT&T Electronics Service Co. of Canada, Ltd., is the second associate of International Telephone & Telegraph Corp. to be established in Canada. The first, Standard Telephones & Cables Mfg. Co. (Canada) Ltd., was formed 11 years ago, also in Montreal.

UTICA



fully guaranteed

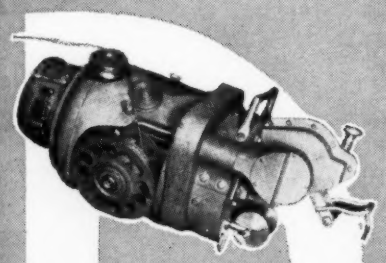
USE UTICA and do the job with industry's finest quality hand tools . . . the tools preferred throughout the telephone and electrical construction fields. Pliers and wrenches drop-forged for rugged durability! Induction hardened at points of greatest wear —for extra strength! And like all Utica hand tools, they are fully guaranteed. **Utica Drop Forge & Tool Division, Kelsey-Hayes Co., Utica 4, New York.**

USE **UTICA** (U TI CA®) *the tools the experts use!*

Hallmark of Quality since 1895

XUM

*Dependability



*The Neale Model "D" pull type spinner for over 12 years has been the work horse of the cable spinning field

- Spins new and existing cable
- Has instant adjustment from minimum to maximum cable sizes
- Positive lock, will not slack off
- Uses all sizes and types spinning wire
- Weighs only 42 pounds

THE MODEL "D" IS THE WORK HORSE IN THE CABLE SPINNING FIELD

PLEASE WRITE FOR LITERATURE

CABLE SPINNING EQUIPMENT CO.
3100 TOPEKA AVE.
TOPEKA KANSAS
Serving the growing Independent telephone industry
OVERSEAS SALES:
Ericsson Corp. of New York
Automatic Electric of Canada

General Bayer Named to Stromberg Electronics Post

Brig. Gen. William L. Bayer, United States Army, retired, has been appointed manager—military marketing in the electronics division of Stromberg-Carlson, according to an announcement by George A. Peck, vice president and general manager of the division. Stromberg-Carlson is a division of General Dynamics Corp. In his new position, General Bayer will coordinate military contract activities.

BRIG. GEN. W. L. BAYER

A native of New York City, General Bayer attended Haverford College prior to his appointment in 1922 to the U. S. Military Academy from which he received a bachelor of science degree. Subsequently he did graduate work at Yale University, and received a master of science degree in communication engineering in 1927.

In his military career he was graduated from the Industrial College of the Armed Forces, the Command and General Staff College, and the Company Officers' Course of the Signal Corps School.

During his early service in the Signal Corps, General Bayer was an instructor in the Signal Corps School at Fort Monmouth, N. J. Just prior to World War II he was placed in charge of the development of all airborne radar equipment at the Signal Corps Aircraft Radio Laboratory at Wright Feld, Dayton, O.

During the latter part of World War II he was assigned to the Office of the Chief Signal Officer, in Washington, where he established the procedure now used by the Signal Corps for the provisioning and maintenance of Signal Corps equipment. At the end of the war he was sent to Germany and assigned the responsibility of establishing the signal supply system for the U. S. Occupation Forces there.

Later he was a member of the Joint Staff on Strategic Planning, and from 1951 to 1953 was signal officer of the Japan Logistics Command, where he was responsible for management of the Japanese telephone system operated by the Japanese for the military occupation forces, and for all Signal Corps communications and supply activities in Japan.

In 1954 General Bayer was placed in command of the U. S. Army Signal Supply Agency, in Philadelphia, and continued in that capacity until his retirement.

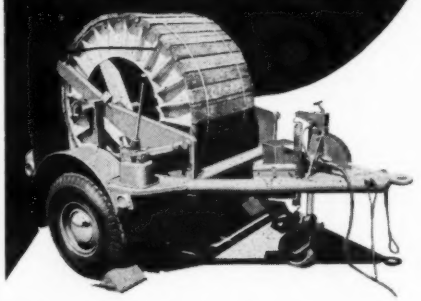
General Bayer served with the Signal Corps for 30 years, from his graduation from the U. S. Military Academy in 1926 until his retirement in 1956.

Pacific T&T Appoints Two Vice Presidents

Appointment of George Dean as vice president and general manager of Pacific Telephone & Telegraph Co.'s northern California area was announced on Oct. 31 by Mark R. Sullivan, president of Pacific T&T.

Mr. Dean succeeds E. D. Maloney, who has been named vice president, personnel, with coastwide responsibilities.

TRUCO Lightweight WIRE CARRIER



- Hydraulic Reel Lift
- Hydraulic Front Support
- Spring Suspension
- Up to 4000 lb. loads

All hydraulic operation for easy one-man loading and unloading.

Other Truco Hydraulic Reel carriers available in capacities up to 14,000 lbs. Special large capacities built on order.

Truco
TRUCK Equipment co.
3963 Walnut Street
Denver 5, Colorado

C&D Batteries Names New Baltimore Salesman

C&D Batteries, Inc. has appointed Edward H. Gossling Jr. a new salesman in the Baltimore territory, the company announced.

The Conshohocken, Pa. company manufactures industrial storage batteries

E. H. GOSSLING JR.

for powering electric lift trucks; for the telephone industry; for railroads, mining, control, and other industrial applications.

In his new assignment, Mr. Gossling will work out of C&D Batteries' Philadelphia sales office, Charles F. Gross Associates.

A former sales engineer for Flectler Works, manufacturers of centrifuges for chemical and food processing, Mr. Gossling has also been associated with L. P. Muller & Co. in textile sales.

Malleable Iron Fittings Co. Opens Chicago Warehouse

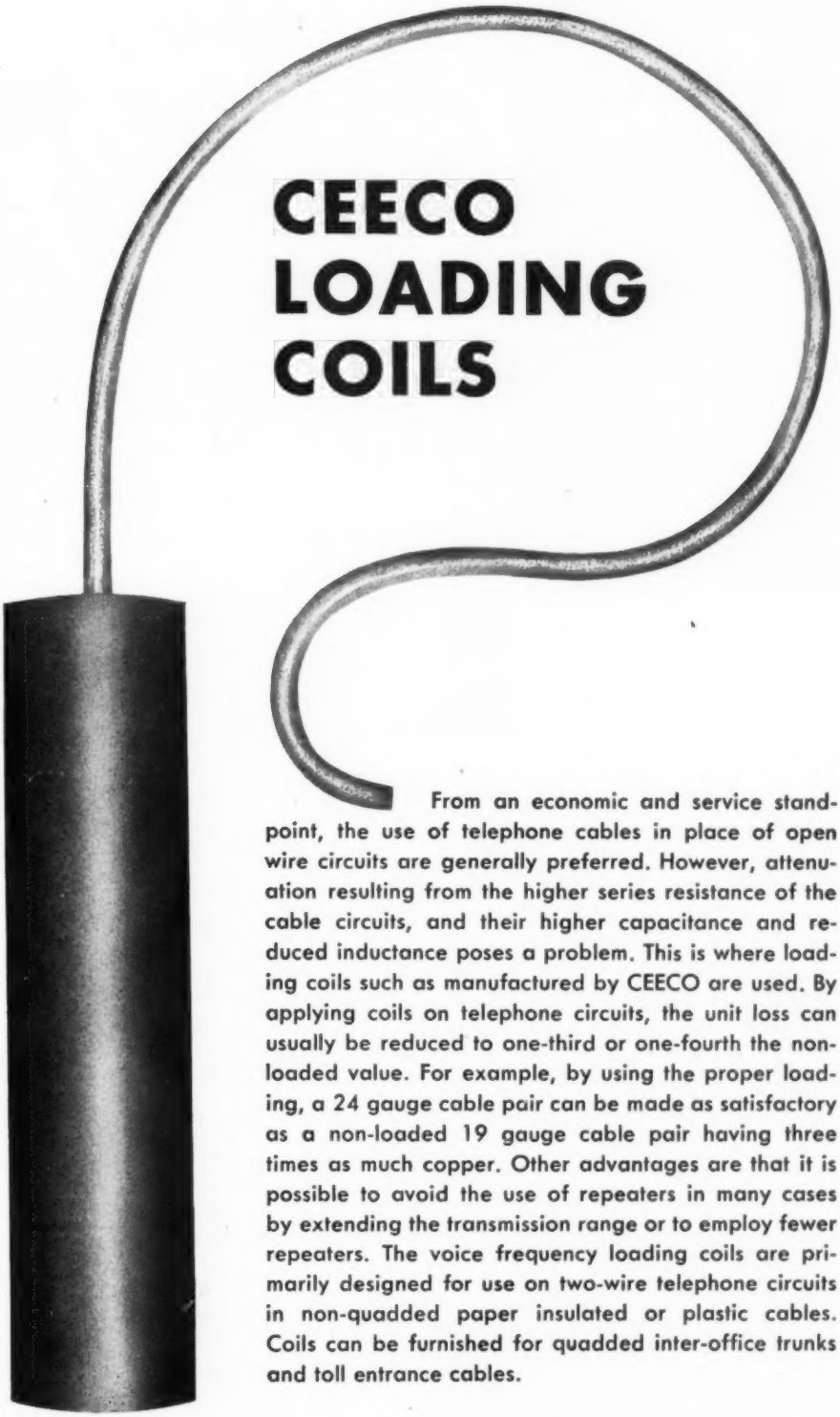
Mr. O. R. Higgins, sales manager, pole hardware division, Malleable Iron Fittings Co., Branford, Conn., has announced the establishment of warehouse facilities in Chicago at 1500 South Western Ave.

The Malleable Iron Fittings Co. is represented in the midwest area by: O. C. Witte Co., Detroit; the J. S. G. Electric Co., Chicago; James H. Drew Corp., Indianapolis; L. G. Wendegatz, Kansas City; and the Hugo Sales Co. in Minneapolis.

Alice in Wonderland

"How long can we continue to tax and tax and spend and spend and at the same time continue our progress and preserve our solvency? . . . Spending programs start as mice and quickly grow into the size of elephants."—HARRY F. BYRD, *U. S. Senator from Virginia.*

You can reduce unit loss and use of repeaters with



CEECO LOADING COILS

From an economic and service standpoint, the use of telephone cables in place of open wire circuits are generally preferred. However, attenuation resulting from the higher series resistance of the cable circuits, and their higher capacitance and reduced inductance poses a problem. This is where loading coils such as manufactured by CEECO are used. By applying coils on telephone circuits, the unit loss can usually be reduced to one-third or one-fourth the non-loaded value. For example, by using the proper loading, a 24 gauge cable pair can be made as satisfactory as a non-loaded 19 gauge cable pair having three times as much copper. Other advantages are that it is possible to avoid the use of repeaters in many cases by extending the transmission range or to employ fewer repeaters. The voice frequency loading coils are primarily designed for use on two-wire telephone circuits in non-quadded paper insulated or plastic cables. Coils can be furnished for quadded inter-office trunks and toll entrance cables.

WRITE FOR CIRCULAR ON CEECO LOADING COILS

BUCKEYE TELEPHONE & SUPPLY CO.

1250 KINNEAR RD. **COLUMBUS 21, OHIO**

HEAVY DUTY

Multiple Arm

RELAYS

by SIGNAL

- Versatile — Rugged
- Cast Aluminum Base
- High Shock and Vibration Resistant
- Available AC — DC
- Contact Capacities Available 10; 35; 50 amp.
- Contact Combinations on Same Base
- Designed to Meet Many MIL Spec's

A superior relay that has endured the test of time . . . Specified for many years by America's largest manufacturer of electrical controls and communications equipment.

For complete data, write for Bulletin No. 30-4

Engineering representatives in principal cities

Signal Engineering & Mfg. Co., has changed its name to

Wheelock SIGNALS INC

RELAYS W S LONG BRANCH, N. J.

TELEPHONE AND TELEGRAPH EQUIPMENT

Radio Engineering Products is currently producing a number of types of equipment, electrically and mechanically interchangeable with standard Bell System apparatus.

CARRIER-TELEPHONE EQUIPMENT

C5 Carrier-Telephone Terminal (J68756). A kit for adding a fourth toll-grade channel to existing C systems is available. • C1 Carrier-Telephone Repeater (J68757) • 121A C Carrier Line Filter • H Carrier Line Filter (X66217C).

CARRIER-TELEGRAPH EQUIPMENT

40C1 Carrier-Telegraph Channel Terminal (J70047C) • 140A1 Carrier Supply (J70036A1, etc.) • 40AC1 Carrier-Telegraph Terminal.

VOICE-FREQUENCY EQUIPMENT

V1 Telephone Repeater (J68368F) • Power Supply (J68638A1) • V1 Amplifiers (J68635E2 and J68635A2) • V3 Amplifier (J68649A) • V-F Ringers (J68602, etc.) • Four Wire Terminating Set (J68625G1) • 1C Volume Limiter (J68736C).

D-C TELEGRAPH EQUIPMENT

16B1 Telegraph Repeater (J70037B) • 10E1 Telegraph Repeater (J70021A) • 128B2 Teletypewriter Subscriber Set (J70027A).

TEST EQUIPMENT

2A Toll Test Unit (X63699A) • 12B, 13A, 30A (J64030A) and 32A (J64032A) Transmission Measuring Sets • 111A2 Relay Test Panel (J66118E) • 118C2 Telegraph Transmission Measuring Set (J70069K) • 163A2 Test Unit (J70045B) • 163C1 Test Unit (J70045D).

COMPONENTS AND ACCESSORIES

255A and 209FG Polar Relays • Repeating and Retard Coils, several types • 184, 185, 230A and 230B Jack Mountings.

RADIO ENGINEERING PRODUCTS

1080 UNIVERSITY ST., MONTREAL 3, CANADA

TELEPHONE UNiversity 6-6887

CABLES RADENPRO, MONTREAL

Teletype Corp. Celebrates 50th Anniversary

Teletype Corp., Chicago, pioneer in the field of printing telegraph equipment, is celebrating its 50th anniversary this year.

From a modest beginning in the attic of a cold storage warehouse, the company has skyrocketed to become the largest manufacturer and supplier of printing telegraph equipment in the world.

Less than 50 years ago people blinked their eyes in disbelief when 40 words per minute were transmitted. Today, company officials say, Teletype equipment can transmit up to 600 words a minute from punched tapes.

Today there are more than 250,000 Teleprinters in use throughout the world. Of these, 50,000 are in TWX—Teletypewriter exchange service. This service, offered by telephone companies to subscribers who wish to communicate by wire, has grown from 50 messages a day in 1931 to today's average of 100,000 daily.

Teleprinters are finding new uses daily. Unattended radio transmitting and receiving stations at remote sites, for example, are now controlled by signals from Teletype equipment. And business transactions across the Atlantic are being consummated faster and with less error than ever thought possible.

These and many other modern uses of teletype equipment were far from the minds of Joy Morton, of the Morton Salt interests, and Charles Krum, a cold storage engineer, who organized the Morkrum Co., Teletype's predecessor, on Oct. 5, 1907. A year after the Morkrum Co. was formed, one of the earliest page printers was developed.

Experimentation with printing telegraph equipment had actually begun in 1902 in the attic of a cold storage warehouse in Chicago.

A merger resulted in the Morkrum-Kleinschmidt Corp. in 1925, and three years later the company changed its name to the Teletype Corp. In 1930, the company was purchased by the American Telephone & Telegraph Co.

About 5,600 persons are employed in Teletype's two main plants in Chicago and at five smaller plants on Chicago's northwest side. Construction is under way on a 105-acre site in Skokie, Ill., a Chicago suburb, for the first of three new Teletype buildings to contain research, sales and manufacturing facilities.

Value of Good Advice

"When all is done, the help of good counsel is that which setteth business straight."—BACON.

Early type page printer

Teletype Model 28 printer

TELETYPE® MARKS 50 YEARS OF PROGRESS

Progress, 1907 style, was built into our very first product here at Teletype—the first really practical telegraph printer.

Today, Teletype equipment—handling both text and punched tape—is helping communications companies spark progress for their customers in countless *new* fields . . . going far beyond its basic talents as a communications device. It is helping coordinate industrial production lines . . . classify freight cars . . . channel complex raw data to computer centers and retransmit the answers . . . speed the progress of office automation, cutting down on paper work at the same time.

It is likely that some of these progressive new Teletype ideas can help you offer even wider service to business and industry—and increase revenues from private wire and teletypewriter exchange services.

For more information send for our booklet, "The ABC's of Teletype Equipment." Write to Teletype Corporation, Dept. T11, 4100 Fullerton Avenue, Chicago 39, Illinois.

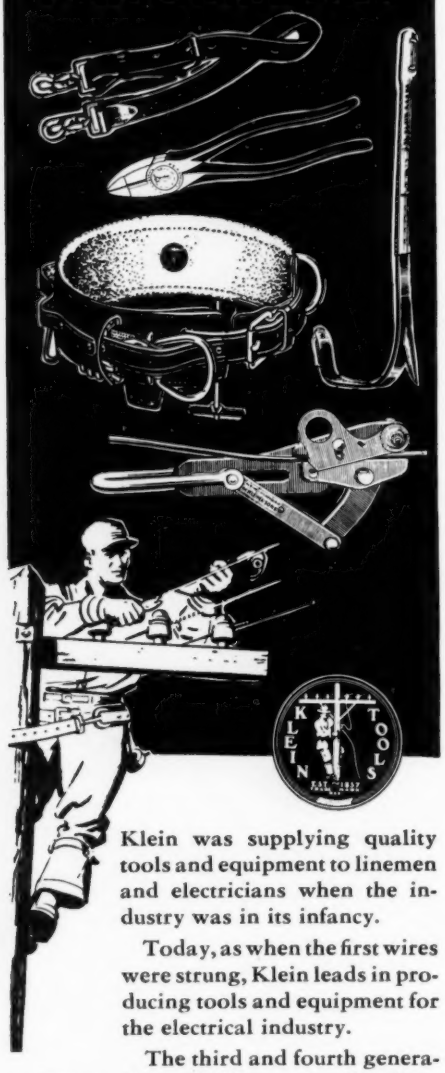
TELETYPE®

TELETYPE CORPORATION
SUBSIDIARY OF
Western Electric Company

1957 Golden Anniversary Year

KLEIN

FOR GREATER SAFETY, BETTER PERFORMANCE



Klein was supplying quality tools and equipment to linemen and electricians when the industry was in its infancy.

Today, as when the first wires were strung, Klein leads in producing tools and equipment for the electrical industry.

The third and fourth generations of Kleins are still adhering to the quality standards set a century ago. The new Klein plant, equipped with the latest in manufacturing facilities, assures better, safer equipment, wherever power lines or communication lines are strung.

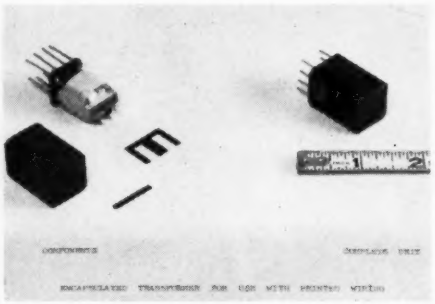
100 years of service to linemen, electricians and industry is back of this new Pocket Tool Guide No. 100. A copy will be sent to you upon request, without obligation.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

News on New Products

MINIATURIZED TRANSFORMERS—Miniaturized transformers for handling a wide range of audio and carrier frequencies, and designed especially for mounting on printed wiring boards, now are being produced by Stromberg-Carlson, a division of General Dynamics Corp.

Core structures of these new transformers are nickel-iron laminations for the audio frequency units, and ferrite



for those in the carrier frequency ranges. Windings are of polyurethane-insulated copper wire, and are separated by Mylar.

Cases are made of injection-molded phenolic in two sizes, 1 1/16 inches x 3/4 inches x 3/4 inches, and 1 1/16 inches x 15/16 inches x 1 1/8 inches. After assembly the units are filled with an epoxy casting resin. This construction provides excellent performance under extreme humidity and temperature conditions. Request NP751.

•

TELEPHONE BOOTHS—A new concept in outdoor telephone booths has

been introduced in the Suttle-Kaiser aluminum full length booth. The new booth, designed by Kaiser Aluminum and manufactured by Suttle Equipment Co., utilizes aluminum shade screen cast into acrylite plastic by Wasco Products, Inc.

According to the Suttle company, the booth provides the following features: New, rugged, long wearing material, with an interior cooled as much as 15 degrees over outside temperature, brightly lighted colored top with multi-

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

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NP755_____; NP756_____; NP757_____; NP758_____;
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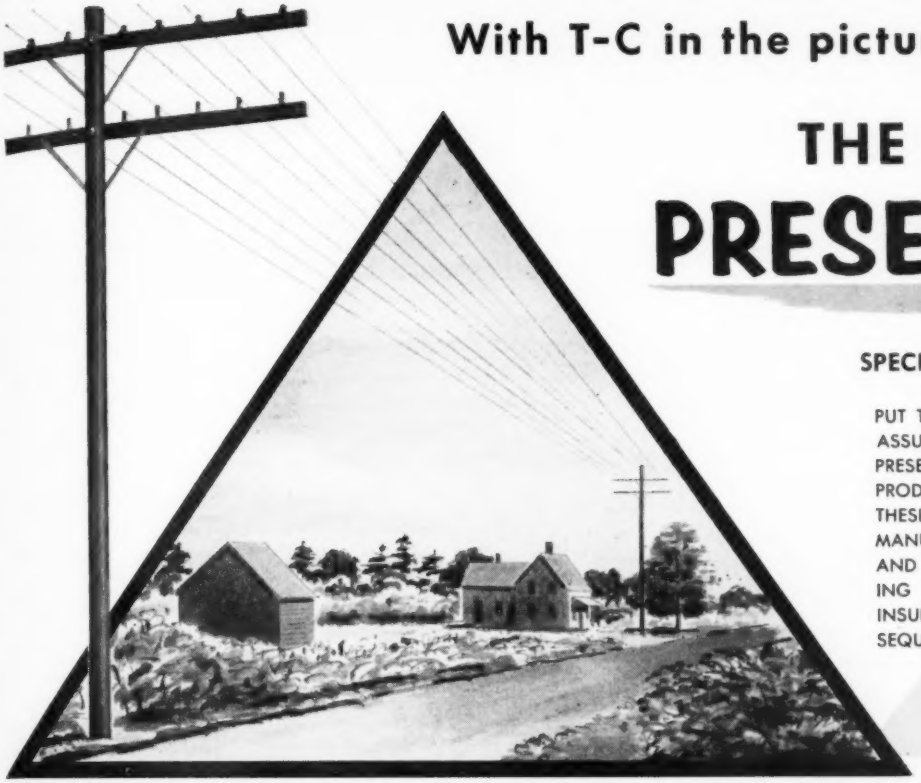

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SPECIFY T-C PRESSURE TREATED POLES

PUT T-C IN YOUR POLE PICTURE . . . THEN REST ASSURED YOU HAVE POLES WITH THE BEST IN PRESERVATION. HERE'S WHY, EVERY STEP IN T-C PRODUCTION IS SUBJECT TO PRECISE CONTROL. THESE CONTROLS COVER TIMBER SELECTION AND MANUFACTURE AS WELL AS MOISTURE REMOVAL AND TREATMENT. DEVELOPED AND REFINED DURING T-C'S 30 YEAR HISTORY, THESE CONTROLS INSURE YOU UNIFORM HIGH QUALITY AND CONSEQUENT MAXIMUM LONG LIFE.

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CIRCUIT THEORY and DESIGN

By John L. Stewart, *California Institute of Technology*. Stressing modern, powerful pole-zero design methods, this book applies modern network theory to the understanding of vacuum tubes and feedback systems.

The author avoids use of abstract mathematics, yet gives data and design procedures of practical significance, discussing a wide variety of specific devices. The pole-zero design methods, given in easy-to-use form, show development of design for a large variety of circuits with and without vacuum tubes, and for systems with and without feedback. This book is a *must* for anyone interested in design and research in linear systems. **1956. 480 pages. 463 illus. $9.50.**

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PAGE LASHING WIRE OF Stainless Steel

You get a neat and long-lasting job every time you use PAGE Stainless Steel Lashing Wire! Ideal for lashing conductor cables (lead or neoprene covered) to a strand messenger by Neale or Western Electric Machine. Coils tailored to fit machine specified.

3 GRADES • EACH IN 2 SIZES (.065 and .045)

Type 430 • for use with galvanized messengers
Type 302 • for use with stainless messengers
Type 316 • for use under severe corrosion conditions

Furnished six coils in cardboard carton (minimum order).

Other fine-quality products • You can depend upon PAGE Strand (Stainless or Galvanized Steel) and PAGE Stainless Dead-End Wire • See your Telephone Supply Distributor, or write our Monessen, Pa., office.

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AMERICAN CHAIN & CABLE

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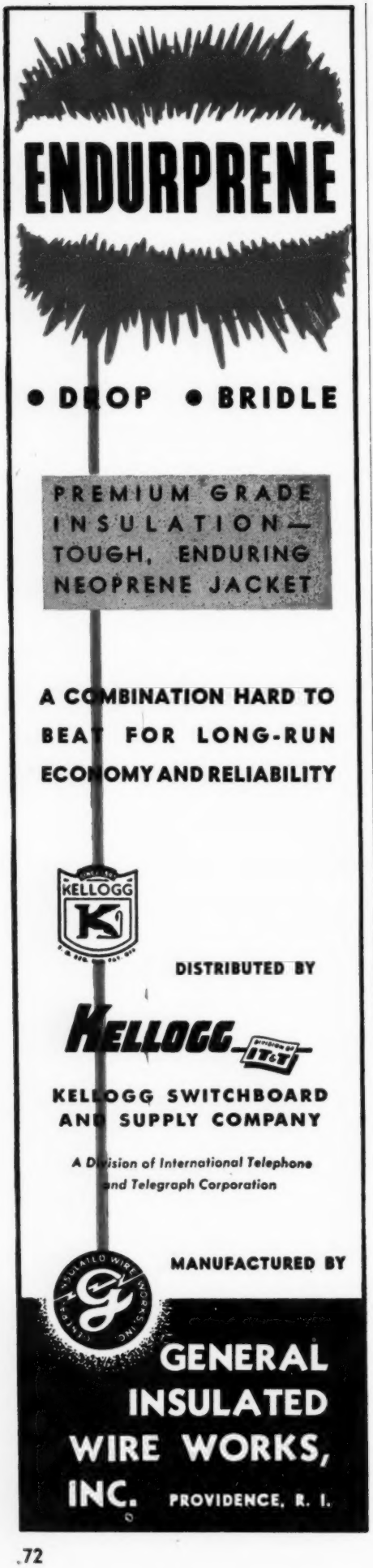
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PREMIUM GRADE INSULATION— TOUGH, ENDURING NEOPRENE JACKET
A COMBINATION HARD TO BEAT FOR LONG-RUN ECONOMY AND RELIABILITY
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KELLOGG SWITCHBOARD AND SUPPLY COMPANY
A Division of International Telephone and Telegraph Corporation
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GENERAL INSULATED WIRE WORKS, INC. PROVIDENCE, R. I.

color combinations; air vents at the top; elimination of light glare; increased daytime privacy (but the user is visible); circular construction, facilitating cleaning; easy replacement of damaged panels.

The booth weighs 210 pounds. Request NP752.

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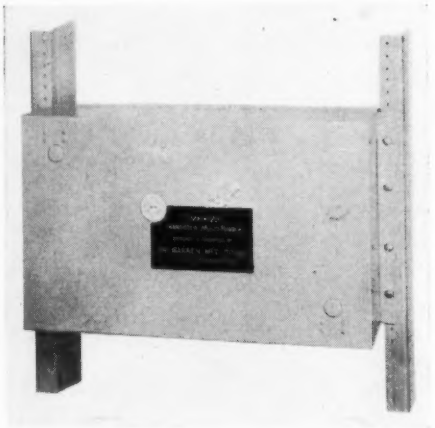
POWER EQUIPMENT—The Warren Mfg. Co. has introduced a new line of telephone power equipment.

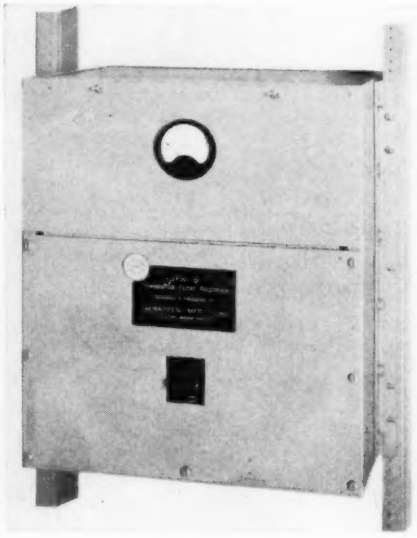
Among the units is the new Warren Type TMR Transistor Multi-Ringer,



which has been designed and built expressly for the Independent telephone industry. The 25-watt unit, a device which provides an efficient source of ringing voltage in the harmonic, synchromonic, and decimonic series for telephone offices of small or moderate size.

One of the features of the unit is the ringer which employs an all-transistor design, operates directly from office battery, utilizes a new oscillator concept which holds frequency drift within $\pm 1/6$ of a cycle, and is self protecting without the use of output fuses or contactors.

Also introduced is a static, transistor-



equipped float rectifier Type TFR which provides a steady, humless direct current for float-charging office batteries. The unit features a Zener diode voltage reference circuit, transistor error amplification, and a self-saturating magnetic amplifier control circuit.

All components have been optimized for maximum efficiency and the unit offers a remote sensing provision for better battery management, the company states. Light-load performance has been improved for off-peak savings, and circuitry has been simplified for reliability and dependability, it is said. Request NP753.

•

PLIER-SHEAR CUTTER—Mathias Klein & Sons has announced a new shear cutting oblique plier No. 207-5C

(Patent Pending). The manufacturer states that the plier is 5½ inches long and the shear cutting blade will cut dead soft or extremely hard wire.

Blades may be replaced; hence, the plier never needs sharpening. Regular cutting knives in the nose add to the usefulness and a coil spring keeps the jaws apart ready for instant use. Request NP754.

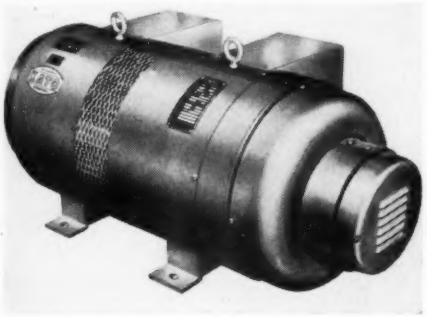
•

MOTOR-GENERATOR—Recently, the Kato Engineering Co. expanded its existing line of frequency changing motor-generator sets and has redesigned many of the frame styles as well as the internal construction of the units due to increased demands for 400-cycle ac current from aircraft and other industries.

Illustrated is a 15 kw, 440-cycle unit. The input is 25 hp, 220/440 volt, three-

XUM

phase, 60-cycle, nine-wire, squirrel cage induction motor. The output is 15 kw, 18.75 kva, 80 per cent power factor, 120/240 volt, single phase or three phase, four-wire, 14-pole, 400-cycle revolving field alternator. The unit operates at 3,428 rpm.

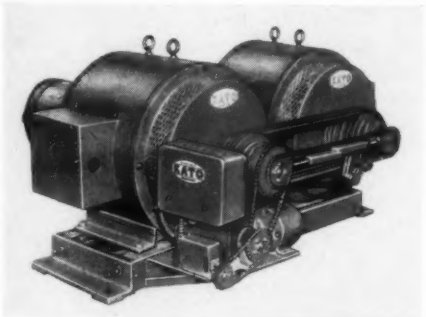


Both the motor and the alternator as well as the armature of the direct current field pole exciter are mounted on a common shaft. This recent exciter design permits the exciter armature to be supported by the generator end bearing. A sleeve in the armature core fits over an extension of the main shaft, permitting two bearing construction.

The 400 cycle motor-generator set line has been expanded to 250 kva. These larger units are built in four bearing construction with the independent two bearing motor and two bearing generator mounted on a common welded steel frame. Request NP755.

•

PUSH BUTTON GENERATOR—Convenient push button frequency adjustment at any location can be provided by a 1200 rpm synchronous motor and 1200 rpm revolving field generator set, also manufactured by Kato Engineering Co. Generator speed is 1,080 rpm for 360 cps, 1,320 rpm for 440 cps. Generator rating is 5 kw, three-phase.



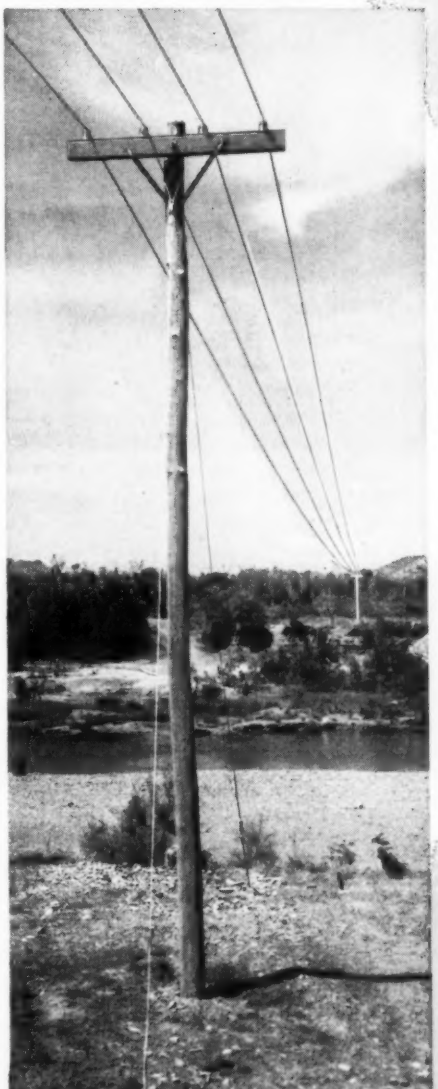
A motor with reduction gear provides power to alter pitch of variable pulleys on both motor and generator. Increase and decrease of speed is accomplished by merely pushing a fast or slow push button.

Precise frequency and voltage regulation is provided. Control equipment includes magnetic amplifier type voltage regulator synchronous motor starter,

Crapo HTL-195

FOR EXTRA LONG SPAN RURAL LINES

The NEW LOWER Resistance Extra-High Tensile Line Wire



- Better Voice Transmission
- Spans to 600 Feet or More
- Savings in Material and Labor
- Lower Ultimate Costs

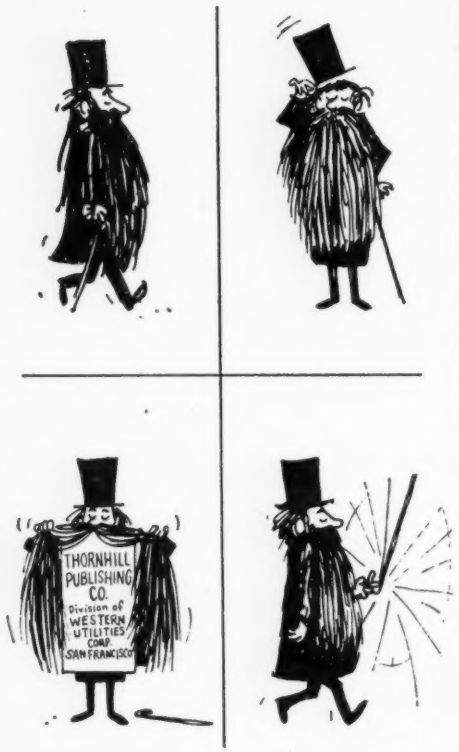
Superior voice transmission qualities and extra high physical strength are combined in *Crapo* HTL-195 to provide the most practical and economical of conductors for rural telephone circuits.

This new, lower-resistance steel line wire, with a minimum breaking strength of 1800 pounds, makes possible spans to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading areas. Where terrain and other conditions permit the use of extra long spans, this means a 40% reduction in pole structures. The savings in materials and in construction costs will be apparent.

Before building new, or replacing old rural lines, investigate the possibilities of *Crapo* HTL-195! Write for complete information, including Manual of Engineering Data, No. A-195!

Pioneers in the development of high tensile and extra-high tensile steel line wire, and associated products, for the telephone industry.

INDIANA STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA



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Kenova, W. Va. Phone GL 3-3471
Clarksburg, W. Va. Phone MA 4-4611

load limit switch and reset buttons. Remote control panels can be furnished, enabling remote locations of outlets with frequency adjustment to be installed.

With use of magnetic amplifier type voltage regulator, voltage regulation can be kept within 1 per cent plus or minus from no load to full load. Request NP756.

•

MOBILE RF SIGNAL GENERATOR—A new, laboratory standard RF signal generator especially designed for servicing land mobile communications systems has been announced by Motorola.

This new signal generator provides complete coverage of all land mobile

communications bands presently used for two-way mobile and base stations radio operation. Six individually calibrated, direct-reading scales cover the 25-54, 140-175, 400-470, and 890-960 mc bands.

This new signal generator weighs only 26 pounds, measures only 10 x 14 x 7¼ inches, and can be carried with one hand. When carried, the face of the instrument is protected by a sturdy drawn aluminum cover having a black wrinkle finish to match the rest of the case.

Each range is individually calibrated with an accuracy of ±0.5 per cent; the signal generated is stable to within .001 per cent in any five-minute interval. Output voltage is continously variable from .1 to 100,000 microvolts.

An internal choke permits use of an external audio source to amplitude modulate the RF with resulting incidental frequency modulation. The generator is terminated in a type N connector. Also included is a 2:1 voltage ratio pad and a 4 foot length of RG-55/U coaxial cable. Request NP757.

•

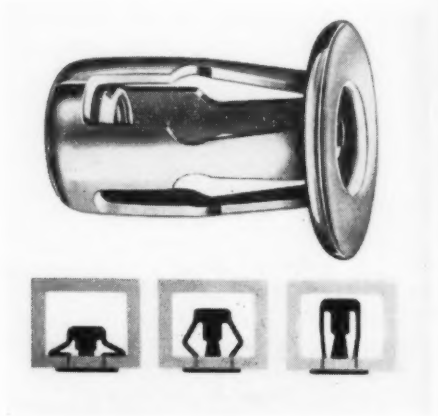
NYLON RESIN—A new nylon resin, combining mechanical toughness with outstanding resistance to heat and weathering, has been developed by Du Pont.

Called "Zytel" 37X nylon resin, it is designed primarily as a wire jacketing material for power and communications cables, wire rope, service drop wire, and tree wire.

A jet black molding and extrusion powder, "Zytel" 37X is specially compounded with heat and light stabilizers. Although Du Pont is not yet ready to predict ultimate outdoor life, it states accelerated heat and light tests indicate that "Zytel" 37X will far outlive any other nylon. Request NP758.

•

BLIND FASTENERS—A blind fastener about one-half the length of the shortest hollow wall anchor previously available has been developed by the Molly Corp.



Called the Jack Nut, it was designed to fill the need for a fastener to hold fixtures securely in hollow construction with narrow expansion areas. Workable in space as small as ⅜ inch, Jack Nuts can be used in hollow-core flush doors, plywood or wallboard over narrow furring strips, in places where larger anchors will not work and wood or sheet metal screws will not hold.

Jack Nuts are self-adjusting to grip any kind of material. They are available in two lengths: Short for thicknesses from 0 inches to $\frac{3}{16}$ inches and long for 0 inches to ⅜ inches. Jack Nuts can be installed with any U. S. standard 6-32, 10-24 or ¼ inch-20 screw.

They are vibration-proof with weight-carrying capacity limited in most cases only by the strength of the material in which used. Request NP759.

•

INDUSTRIAL LAMP—The Industrial Bright Beam Lamp, a new kind optically designed for all close-work operations, has been announced by Edmund Scientific Co.

This lamp features a mechanical adjustability that enables it to be placed in practically any position for convenient and best illumination for layout,

TAILOR-MADE to suit your needs!

Sales, technical and factory people are a close-knit group at Kennecott! They're experts at working together without fuss or delay, producing telephone cable to customers' specifications. This flexible organization of specialists has a wealth of practical know-how on tap. You *know* the cable they make for *you* will stand the test of time. You see, lines of Kennecott Telephone Cable have been delivering fine service since 1897! Call the Chase sales office near you for full details.

IT'S KENNECOTT TELEPHONE CABLE

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Boston	Dallas	Indianapolis	Newark	Pittsburgh	Seattle
Charlotte	Denver	Kansas City, Mo.	New York (Maspeth, L. I.)	Providence	Waterbury
Chicago	Detroit	Los Angeles		Rochester	

PRESSURIZED CABLE SYSTEMS

The need for an automatic device to stand guard at intervals along pressurized cables has long been recognized. Now United Electric Controls has the answer . . . The Telephone Cable PRESSURE-GUARD.

Developed by U.E., in collaboration with the Bell System, the PRESSURE-GUARD is now available to all Telephone Companies as an aid in reducing cable maintenance costs.

In the past the location of a cable leak was a matter of man hours in climbing poles and manually checking pressure points. When the pressure guard detects a pressure drop it introduces an electrical resistance . . . which indicates at a central monitoring source a cable leak and the location.

Specifications Pressure-Guard

Field Adjustment Range	0 to 15 PSI
Factory Setting	2 ±¼ PSI on falling pressure
Pressure Response	4 ±½ oz.
Proof Pressure	30 PSI
Electric Rating	0.01 amp 110V DC
Load Resistor	Carbon composition 330,000 OHM 1 watt
Take-Off Tube	Tinned Copper 6′ x ¼″ x 0.035
Drop Wire	6′ Type SJ0 #18 stranded 0.2 conductor
Size	6″ x 4½″ x 2½″
Approximate Weight	1¾ lbs.

These specifications may be modified in a great variety of ways to meet the requirements of any given application.

UNITED ELECTRIC *manufactures a complete line of temperature, pressure, and vacuum controls. For applications requiring custom-built units or modified standard units, call upon a UE application engineer for recommendations. Write for complete specification and pricing data on the Telephone Cable Pressure-Guard. Similar data available on all other UE controls.*

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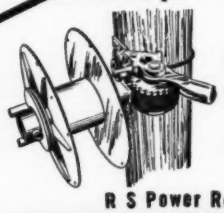
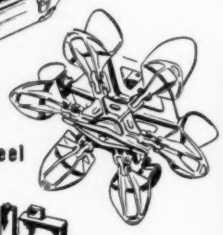
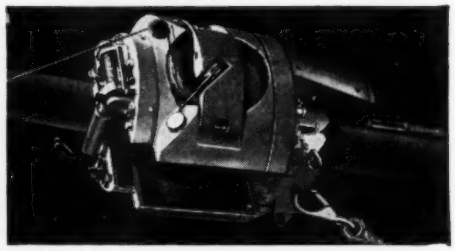
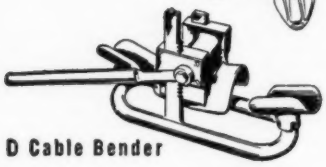

R S Power Reel


C R Power Reel

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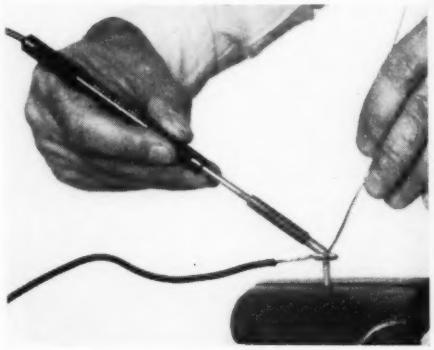
•

PENCIL SOLDERING IRON—A new pencil-type soldering instrument, Oryx Model 25, has been designed for high temperature precision soldering, by Oryx Co.

The new model weighs less than one ounce, yet achieves tip temperatures of 1000°F, while handle remains cool. It

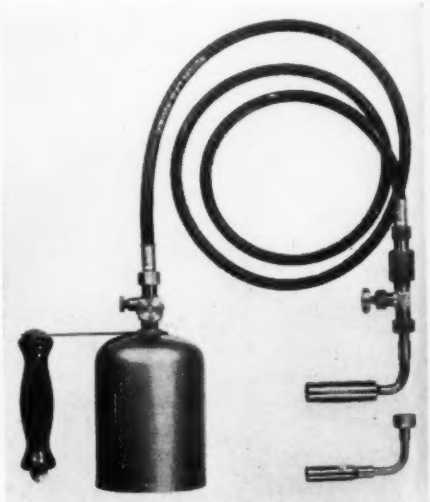


features a 25-watt built-in element supplied with replaceable $\frac{3}{16}$ inch nickel end tip. One-quarter inch copper-chrome alloy tips are also available.

Model 25 operates on 12 volts, 2 amperes, either ac or dc. It can be operated from a battery supply or 110 volts ac, using a step-down transformer available through Oryx. It has particular application in telephone work requiring maximum heat in precision work. Request NP761.

•

CABLE SPLICER'S KIT—A compact cable splicer's kit, which operates on



LP gas is offered by Mutual Liquid Gas Equipment Co.

Fuel for the unit is supplied from the new light-weight B-91 LP-gas hand torch. A redesigned torch-tip assembly is attached to cylinder by a new 6-foot flexible hose.

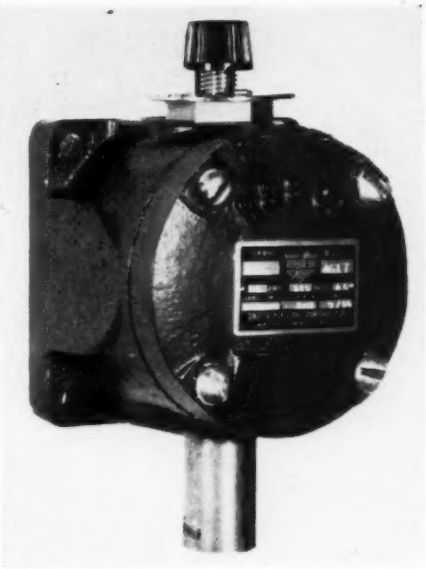
Two tips are available: 491 (attached in photo) which provides an intense, broad flame; and the 491-B which has small super-pointed flame, ideal for close work and in tight places.

It is designed for one-man operation. As heat is applied directly at joint, no lead is melted on ground. The kit can be used on high poles and in small areas with ease. Request NP762.

•

EXPLOSION-PROOF PRESSURE CONTROL—A new explosion-proof pressure control, Type H95, has been added to United Electric Control Co.'s list of standard controls. This calibrated unit is designed to provide accurate and reliable pressure control in hazardous locations where explosive vapors or gases are present.

The H95 pressure settings are easily made with an external adjustment knob and calibrated dial. Models are available with adjustable range spans between 0 and 500 psi, and maximum pressures up to 600 psi.



Switch differentials in the 22 models range from 1.5 ±½ inch Hg. to 7 ±3 psi. These may be increased or decreased according to requirements.

The compact units can be supplied with any one of three standard types of snap action switches: Class R, normally closed circuit, opens on rising pressures; Class G, normally open circuit, closes on rising pressures; Class B, double throw with no neutral position. All switch classes are suitable for 180° F ambient temperatures and are rated at 15 amps at 115 or 230 volts ac.

The H95 enclosure casing permits the use of this control in Class I, Group C and D locations as defined by the National Electrical Code. Request NP 763.

•

PORTABLE ELECTRIC GENERATING EQUIPMENT—The saving of time made possible by the use of power tools such as saws, drills, sanders, planers, etc., out on the line has long been a known fact to telephone construction men. The difficulty with using these tools, however, has been the economical provision of portable power on the line construction truck.

Electric Controls, Inc., reports this problem has now been solved by its development of Electrol GenerAC, electrical generating equipment that can be hooked up to the engine of any truck or car.

These units are heavy duty, 115/230-volt, 60-cycle, ac generators designed for mounting on all popular makes of trucks. They are adapted directly to the

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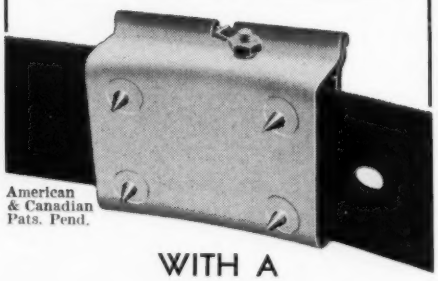

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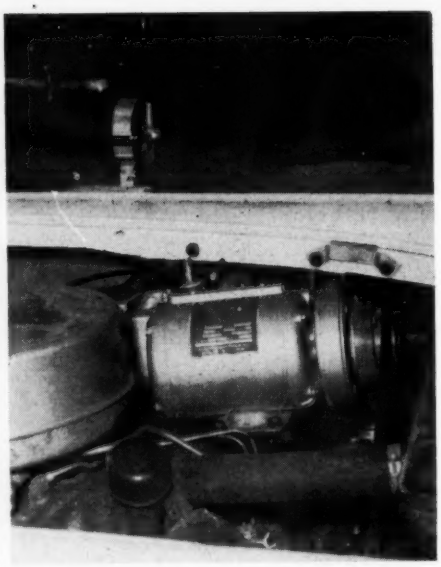

truck engine and driven from the front crank shaft fan belt assembly.

The equipment is available in two power sizes—1,500 and 3,500 watts.

The GenerAC unit is mounted under the hood alongside the engine. The belt drive to the unit is through a clutch, either electric or manual, as desired, which permits disengaging the unit when power is not required. The clutch drive eliminates the major causes of belt trouble, the company states, and contributes to a long-life, trouble-free system.

When power is required, the operator pushes a button on the control panel that is mounted under the truck dash board. He then pulls out the panel throttle so that the control meter hand is in a green zone. The unit is now operating and load may be applied at the operator's discretion.

A mounting kit is available for use in installing the GenerAC unit. This kit includes necessary mounting bracket, engine pulley, belt, jack shaft, where required, and all necessary fasteners. It is not necessary to rework or modify the engine compartment in any manner, it is stated. Request NP764.

IT&T Names J. D. Dominguez Assistant Vice President

Jose D. Dominguez, recently appointed executive engineer for the telephone and radio operating department of International Telephone & Telegraph Corp. in New York City, has been elected an assistant vice president of the corporation, it was announced on Oct. 19 by Edmond H. Leavey, president.

Mr. Dominguez has been with the IT&T System for 30 years in various capacities, and was president of its Puerto Rico Telephone Co. from January 1956 to September 1957, during which time the company carried out the largest program of expansion in its history.

Warren Company Licensed For Regulated Rectifiers

The Warren Manufacturing Co. of Littleton, Mass., has entered into a cross-licensing arrangement with the Western Electric Co., Inc. of New York. The agreement was signed on Sept. 12, and is effective as of July 1, 1957.

This bi-lateral agreement grants the Warren Manufacturing Co. cross-licensing rights under the patents of Western Electric, American Telephone & Telegraph Co. and the Bell Telephone Laboratories with respect to regulated rectifiers. It likewise grants Western Electric, American Telephone & Telegraph and the Bell Telephone Laboratories licensing rights under the patents of Warren Manufacturing Co. in this field.

C&D Batteries to Install New AccuRay Control System

C&D Batteries, Inc., manufacturers of industrial storage batteries, announced that a new AccuRay system has been purchased for the automatic control of plate-pasting operation.

"In the very near future, when the new system is put in operation," states John F. Rittenhouse, battery company president, "it will represent the first installation of its kind in the industrial storage battery field."

This latest application of the AccuRay, according to Mr. Rittenhouse, will accurately measure and control the amount of lead oxides that go into each battery plate. The system will provide both a visual indication and chart record every fifth of a second, automatically adjusting the pasting machine to assure highly accurate weight and thickness of each battery plate coming off the line.

As a result, weights and capacities for all plates can be held within the finest tolerances required to deliver the ampere-hours and other electrical characteristics called for by the particular battery specifications.

Current Economic Trend

"Tight money is with us for the foreseeable future, at least through the first half of 1958. . . . The nation is making real headway in closing the gap between spending and savings through tight money influences and the advantageous temper of the people toward savings at this time."—JAMES F. OATES, JR., *president, Equitable Life Assurance Society of the United States.*

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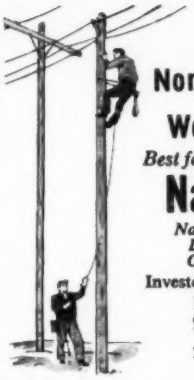

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Index to ADVERTISERS

	Page
Acme Visible Records, Inc.	—
Alphaduct Wire & Cable Co., The	—
Aluminum Company of America	—
American Chain & Cable Co., Inc. Page Steel & Wire Div.	71
Wright Hoist Div.	—
American Creosoting Corporation	41
American Electrical Heater Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	—
Anaconda Wire & Cable Co.	47
Ansonia Wire & Cable Co., The	—
Armstrong Cork Co., Glass Insulators	—
Atlantic Creosoting Co., The	79
Automatic Electric Sales Co.	42-43, 59, 83
Bakelite Company	—
Baker Wood Preserving Co.	79
Bartlett Tree Experts	—
Bashlin Company, W. M.	—
Bell Telephone Laboratories, Inc.	39
Benner-Nauman, Inc.	16
Berry & Co., L. M.	—
Bethlehem Steel Co.	—
Biddle Co., James G.	—
Bishop Manufacturing Corp.	—
Blaw-Knox Company	55
British Insulated Callenders' Cables, Ltd.	35
Buckeye Telephone & Supply Co.	67, 80
Burgess Manning Company	—
Burroughs Corp.	27
C&D Batteries, Inc.	—
Cabaniss-Pogue Co.	79
Cable Breather Corp.	81
Cable Spinning Equipment Co.	66
Calculagraph Company	—
Chance Co., A. B.	—
Chase Brass & Copper Co.	75
Cleveland Inst. of Radio Electronics	—
Coffing Hoist Div.	—
Colorado Fuel & Iron Co., The	—
Commercial Cord and Supply Co.	—
Communication Equipment & Engineering Co.	—
Comptometer Corporation	—
Conroe Creosoting Company	—
Cook Electric Company	45
Copperweld Steel Co.	—
Crane, Inc., Carl C.	79
Cullom & Ghertner	—
Davis Construction Co.	79
Donnelley & Sons, R. R.	—
Dow Chemical Co., The	—
Du Pont de Nemours & Co., E. I.	—
Duo-Safety Ladder Corp.	—
Eastman Chemical Products, Inc.	—
Edmund Scientific Company	—
Electric Specialty Co.	33
Engineering Associates, Inc.	79
Everstick Anchor Co.	78
Exide Industrial Division— The Electric Storage Battery Co.	—
Fitchburg Engineering Corporation	—
Foley Constr. Co., Robert E.	79
Free-Lock Corporation	—
General Cable Corporation	—
General Insulated Wire Works, Inc.	72
General Machine Products Co., Inc.	76
General Telephone Directory Co.	—
Gorman Rupp Company	—
Gould-National Batteries, Inc.	—
Graybar Electric Co.	14-15
Greenlee Tool Co.	—
Haley & Co., R. G.	—
Harris-McBurney Company	—
Henkels & McCoy	79
Highway Trailer Company	—
Hirsch Organization, Inc., Gustav.	—
Holan Corp., J. H.	—
Homelite Corp.	—
Hubbard & Company	—
Indiana Steel & Wire Co.	73
Industrol Corporation	—
Ingram-Richardson Mfg. Co.	—
International Business Machines Corp.	—
International Harvester Co.	—
Irwin Auger Bit Co.	—
Johns-Manville	—
Katolight Corp.	—
Kearney Co., Jas. P.	—
Kellogg Switchboard & Supply Co.	6-7, 28-29, 56-57, 63
Kennecott Wire & Cable Co.	75
Killoren Company	—
Klein & Sons, Mathias	70
Koiled Kords, Inc.	44
Koppers Co., Inc.	—
Kwikopy Company	—
Leich Sales Corporation	12-13
Lindsay Telephone Supply Co.	77
Line Equipment Sales	81
Lorain Products Corp., The	—
Magnolia Chemical Company, Inc.	—
McFarland Company, L. D.	79
McGrath Engineering, Inc.	79
Monsanto Chemical Co.— Plastics Div.	53
Morrison-Pelsue Co.	—
Mullen Construction Co.	—
Murphy Engineering Laboratories	—
Natco Corporation	—
National Pole & Treating Div.	79
National Standard Co.	—
National Telephone Supply Co.	84
Neubauer Manufacturing Co.	—
Neuses, Inc., P. K.	81
North Electric Company	36-37
Onan & Sons, D. W.	62
Orangeburg Manufacturing Co., Inc.	25
Owens-Illinois	—
Page & Hill, Inc.	76
Page Steel & Wire Div. American Chain & Cable Co.	71
Parker, W. H.	81
P-C Corporation	78
Phelps Dodge Copper Products Corp.	—
Philco Corp., Gov't. & Industrial Div.	10-11
Piedmont Wood Preserving Co.	74
Plastic Wire & Cable Co.	—
Porcelain Products, Inc.	—
Porter, Inc., H. K.	—
Prairie Implement Co.	—
Preformed Line Products Co.	—
Prewitt & Sons, Inc., J. R.	—
Radio Engineering Products Ltd.	68
Raytheon Mfg. Co.	31
Recordak Corp.	—
Reliable Electric Company	—
Remington Rand Div.	—
Rex Corporation, The	40
Reynolds Metals Company	—
Roebling's Sons Corp., John A.	49
Rolatape, Inc.	—
Runzel Cord & Wire Co.	—
S&G Manufacturing Corp.	—
Schauer Mfg. Co.	—
Sequoia Process Corp.	—
Seymour Smith & Sons, Inc.	—
Sherron Metallic Corp.	9
Sierra Electric Corp.	—
Sloan, Cook & Lowe Co.	79
Soapstone Duct Co.	—
Stainless, Inc.	—
Stanley-Yankee Tools, Inc., a subsidiary of The Stanley Works	—
Stewart Bros.	—
Stewart-Warner Corp., Electronics Div.	—
Stromberg-Carlson Co.	2-3, 60-61, 81
Superior Cable Corporation	64
Suttle Equipment Co.	81
Taylor-Colquitt Co., The	71
Telectric Co., The	81
T.E.I. Corp.	79
Tele-Muff Co.	—
Telephone & Power Supply Co.	81
Teletype Corp.	69
Tele-Wire Supply Co., Inc.	—
Telkor, Inc.	81
Templeton Kenly & Co.	—
Thornhill Publishing Co.	74
Transandean Associates, Inc.	—
Truck Equipment Company	66
Tudor & Yager, Inc.	79
United Electric Controls Co.	75
U. S. Cable Constructors, Inc.	79
United States Independent Telephone Association	—
United States Instrument Corp.	—
United States Steel Corp. American Steel & Wire Co.	—
Universal Controls Corp.	28-29
Utica Drop Forge & Tool Div.	65
Utility Body Co.	—
Utility Tool & Body Co.	81
Weikel Line Company	79
Western Electric Co.	—
Western Hardware & Tool Co.	—
Wheelock Signals, Inc.	68
White Motor Company, The	—
Whitney-Blake Co.	4-5
Williams Inspection Co., A. W.	79
Wiremold Co., The	—
Wyoming Valley Equipment Div.	—
Yates Construction Co.	79
York-Hoover Corporation	—

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